



SEQUENCE LISTING

5 <110> BOEHRINGER INGELHEIM (CANADA) LTD.

<120> SELF REPLICATING RNA MOLECULE FROM
HEPATITIS C VIRUS

10 <130> 13/083-3-D2

<140> 10/789,355
<141> 2004-02-27

15 <150> 60/257,857
<151> 2000-12-22

<150> 10/029,907
<151> 2001-12-21

20 <160> 30

<170> FastSEQ for Windows Version 4.0

<210> 1
25 <211> 8639
<212> DNA
<213> HCV

<220>
30 <221> CDS
<222> (1803)...(8408)

<400> 1

35 ggccagccccc cgattggggg cgacactcca ccatagatca ctcccctgtg aggaactact 60
gtcttcacgc agaaagcgtc tagccatggc gttagtagta gtgtcgtgca gcctccagga 120
ccccccctcc cgggagagcc atagtgggtc gcggaaccgg tgagtagacc ggaattgcc 180
ggacgaccgg gtcctttctt ggatcaaccc gctcaatgcc tggagatttg ggcgtgcccc 240
cgcgagactg ctagccgagt agtggtgggt cgcgaaaggc cttgtggtac tgctgatag 300
gggtgcttgcg agtgccccgg gaggtctcgt agaccgtgca ccatgagcac gaatcctaaa 360
40 cctcaaagaa aaaccaaagg gcgcgccatg attgaacaag atggattgca cgcaggttct 420
ccggccgctt ggggtggagag gctattcggc tatgactggg cacaacagac aatcggtgc 480
tctgatgccg ccgtgttccg gctgtcagcg caggggcgcc cggttctttt tgtcaagacc 540
gacctgtccg gtgccctgaa tgaactgcag gacgaggcag cgcggtatc gtggctggcc 600
acgacgggcg ttcccttgcc agctgtgctc gacgttgtca ctgaagcggg aagggactgg 660
45 ctgctatttg gcgaagtgcc ggggcaggat ctctgtcat ctacacttgc tcctgccgag 720
aaagtatcca tcatggctga tgcaatgcgg cggctgcata cgcttgatcc ggctacctgc 780
ccattcgacc accaagcgaa acatcgcac gagcgagcac gtactcggat ggaagccggt 840
cttgtcgatc aggatgatct ggacgaagag catcaggggc tcgcgccagc cgaactgttc 900
gccaggctca aggcgcgat gcccgacggc gaggatctcg tcgtgaccca tggcgatgcc 960
50 tgcttgccga atatcatggg ggaatatggc cgcttttctg gattcatcga ctgtggccgg 1020
ctgggtgtgg cggaccgcta tcaggacata gcgttggcta cccgtgatat tgctgaagag 1080
cttggcggcg aatgggctga ccgcttcctc gtgctttacg gtatcgccgc tcccgatccg 1140
cagcgcatcg ccttctatcg ccttcttgac gagttcttct gagttcgcgc ccagatgtta 1200
acagaccaca acggtttccc tctagcggga tcaattccgc cccccccct aacgttactg 1260
55 gccgaagccg cttggaataa ggccggtgtg cgtttgtcta tatgttattt tccaccatat 1320
tgccgtcttt tggaatgtg agggcccggg aacctggccc tgtcttcttg acgagcattc 1380
ctaggggtct tccccctctc gccaaaggaa tgcaaggctc gttgaatgtc gtgaaggaag 1440

	cagttcctct	ggaagcttct	tgaagacaaa	caacgtctgt	agcgaccctt	tgcaggcagc	1500
	ggaaccccc	acctggcgac	aggtgcctct	gcggccaaaa	gccacgtgta	taagatacac	1560
	ctgcaaaggc	ggcacaaccc	cagtgccacg	ttgtgagttg	gatagttgtg	gaaagagtca	1620
5	aatggctctc	ctcaagcgta	ttcaacaagg	ggctgaagga	tgcccagaag	gtacccatt	1680
	gtatgggatac	tgatctgggg	cctcggtgca	catgctttac	atgtgttttag	tcgaggttaa	1740
	aaaacgtcta	ggccccccga	accacgggga	cgtgggtttc	ctttgaaaaa	cacgataata	1800
	cc atg gac	cgg gag atg	gca gca tcg	tgc gga ggc	gcg gtt ttc	gta	1847
	Met Asp Arg	Glu Met Ala	Ala Ala Ser	Cys Gly Gly	Ala Val Phe	Val	
	1	5		10		15	
10							
	ggt ctg ata	ctc ttg acc	ttg tca ccg	cac tat aag	ctg ttc ctc	gct	1895
	Gly Leu Ile	Leu Leu Thr	Leu Ser Pro	His Tyr Lys	Leu Phe Leu	Ala	
		20		25		30	
15							
	agg ctc ata	tgg tgg tta	caa tat ttt	atc acc agg	gcc gag gca	cac	1943
	Arg Leu Ile	Trp Trp Leu	Gln Tyr Phe	Ile Thr Arg	Ala Glu Ala	His	
		35		40		45	
20							
	ttg caa gtg	tgg atc ccc	ccc ctc aac	gtt cgg ggg	ggc cgc gat	gcc	1991
	Leu Gln Val	Trp Ile Pro	Pro Leu Asn	Val Arg Gly	Gly Gly Arg	Asp Ala	
		50		55		60	
25							
	gtc atc ctc	ctc acg tgc	gcg atc cac	cca gag cta	atc ttt acc	atc	2039
	Val Ile Leu	Leu Thr Cys	Ala Ile His	Pro Glu Leu	Ile Phe Thr	Ile	
		65		70		75	
30							
	acc aaa atc	ttg ctc gcc	ata ctc ggt	cca ctc atg	gtg ctc cag	gct	2087
	Thr Lys Ile	Leu Leu Ala	Ile Leu Gly	Pro Leu Met	Val Leu Gln	Ala	
		80		85		90	
35							
	ggt ata acc	aaa gtg ccg	tac ttc gtg	cgc gca cac	ggg ctc att	cgt	2135
	Gly Ile Thr	Lys Val Pro	Tyr Phe Val	Arg Ala His	Gly Leu Ile	Arg	
		100		105		110	
40							
	gca tgc atg	ctg gtg ccg	aag gtt gct	ggg ggt cat	tat gtc caa	atg	2183
	Ala Cys Met	Leu Val Arg	Lys Val Ala	Gly Gly His	Tyr Val Gln	Met	
		115		120		125	
45							
	gct ctc atg	aag ttg gcc	gca ctg aca	ggt acg tac	gtt tat gac	cat	2231
	Ala Leu Met	Lys Leu Ala	Ala Leu Thr	Gly Thr Tyr	Val Tyr Asp	His	
		130		135		140	
50							
	ctc acc cca	ctg ccg gac	tgg gcc cac	gcg ggc cta	cga gac ctt	gcg	2279
	Leu Thr Pro	Leu Arg Asp	Trp Ala His	Ala Gly Leu	Arg Asp Leu	Ala	
		145		150		155	
55							
	gtg gca gtt	gag ccc gtc	gtc ttc tct	gat atg gag	acc aag gtt	atc	2327
	Val Ala Val	Glu Pro Val	Val Phe Ser	Asp Met Glu	Thr Lys Val	Ile	
		160		165		170	
60							
	acc tgg ggg	gca gac acc	gcg gcg tgt	ggg gac atc	atc ttg ggc	ctg	2375
	Thr Trp Gly	Ala Asp Thr	Ala Ala Cys	Gly Asp Ile	Ile Leu Gly	Leu	
		180		185		190	
65							
	ccc gtc tcc	gcc cgc agg	ggg agg gag	ata cat ctg	gga ccg gca	gac	2423
	Pro Val Ser	Ala Arg Arg	Gly Arg Glu	Ile His Leu	Gly Pro Ala	Asp	
		195		200		205	

	agc ctt gaa ggg cag ggg tgg cga ctc ctc gcg cct att acg gcc tac	2471
	Ser Leu Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr	
	210 215 220	
5	tcc caa cag acg cga ggc cta ctt ggc tgc atc atc act agc ctc aca	2519
	Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr	
	225 230 235	
10	ggc cgg gac agg aac cag gtc gag ggg gag gtc caa gtg gtc tcc acc	2567
	Gly Arg Asp Arg Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr	
	240 245 250 255	
15	gca aca caa tct ttc ctg gcg acc tgc gtc aat ggc gtg tgt tgg act	2615
	Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr	
	260 265 270	
20	gtc tat cat ggt gcc ggc tca aag acc ctt gcc ggc cca aag ggc cca	2663
	Val Tyr His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro	
	275 280 285	
25	atc acc caa atg tac acc aat gtg gac cag gac ctc gtc ggc tgg caa	2711
	Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln	
	290 295 300	
30	gcg ccc ccc ggg gcg cgt tcc ttg aca cca tgc acc tgc ggc agc tcg	2759
	Ala Pro Pro Gly Ala Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser	
	305 310 315	
35	gac ctt tac ttg gtc acg agg cat gcc gat gtc att ccg gtg cgc cgg	2807
	Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg	
	320 325 330 335	
40	cgg ggc gac agc agg ggg agc cta ctc tcc ccc agg ccc gtc tcc tac	2855
	Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr	
	340 345 350	
45	ttg aag ggc tct tcg ggc ggt cca ctg ctc tgc ccc tcg ggg cac gct	2903
	Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala	
	355 360 365	
50	gtg ggc atc ttt cgg gct gcc gtg tgc acc cga ggg gtt gcg aag gcg	2951
	Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala	
	370 375 380	
55	gtg gac ttt gta ccc gtc gag tct atg gaa acc act atg cgg tcc ccg	2999
	Val Asp Phe Val Pro Val Glu Ser Met Glu Thr Thr Met Arg Ser Pro	
	385 390 395	
60	gtc ttc acg gac aac tcg tcc cct ccg gcc gta ccg cag aca ttc cag	3047
	Val Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro Gln Thr Phe Gln	
	400 405 410 415	
65	gtg gcc cat cta cac gcc cct act ggt agc ggc aag agc act aag gtg	3095
	Val Ala His Leu His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val	
	420 425 430	

	ccg gct gcg tat gca gcc caa ggg tat aag gtg ctt gtc ctg aac ccg	3143
	Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro	
	435 440 445	
5	tcc gtc gcc gcc acc cta ggt ttc ggg gcg tat atg tct aag gca cat	3191
	Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His	
	450 455 460	
10	ggg atc gac cct aac atc aga acc ggg gta agg acc atc acc acg ggt	3239
	Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly	
	465 470 475	
15	gcc ccc atc acg tac tcc acc tat ggc aag ttt ctt gcc gac ggt ggt	3287
	Ala Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly	
	480 485 490 495	
20	tgc tct ggg ggc gcc tat gac atc ata ata tgt gat gag tgc cac tca	3335
	Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser	
	500 505 510	
25	act gac tcg acc act atc ctg ggc atc ggc aca gtc ctg gac caa gcg	3383
	Thr Asp Ser Thr Thr Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala	
	515 520 525	
30	gag acg gct gga gcg cga ctc gtc gtg ctc gcc acc gct acg cct ccg	3431
	Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro	
	530 535 540	
35	gga tcg gtc acc gtg cca cat cca aac atc gag gag gtg gct ctg tcc	3479
	Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser	
	545 550 555	
40	agc act gga gaa atc ccc ttt tat ggc aaa gcc atc ccc atc gag acc	3527
	Ser Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Ile Glu Thr	
	560 565 570 575	
45	atc aag ggg ggg agg cac ctc att ttc tgc cat tcc aag aag aaa tgt	3575
	Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys	
	580 585 590	
50	gat gag ctc gcc gcg aag ctg tcc ggc ctc gga ctc aat gct gta gca	3623
	Asp Glu Leu Ala Ala Lys Leu Ser Gly Leu Gly Leu Asn Ala Val Ala	
	595 600 605	
55	tat tac cgg ggc ctt gat gta tcc gtc ata cca act agc gga gac gtc	3671
	Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val	
	610 615 620	
60	att gtc gta gca acg gac gct cta atg acg ggc ttt acc ggc gat ttc	3719
	Ile Val Val Ala Thr Asp Ala Leu Met Thr Gly Phe Thr Gly Asp Phe	
	625 630 635	
65	gac tca gtg atc gac tgc aat aca tgt gtc acc cag aca gtc gac ttc	3767
	Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe	
	640 645 650 655	
70	agc ctg gac ccg acc ttc acc att gag acg acg acc gtg cca caa gac	3815

	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Thr	Thr	Val	Pro	Gln	Asp	
					660					665					670		
5	gcg	gtg	tca	cgc	tcg	cag	cgg	cga	ggc	agg	act	ggt	agg	ggc	agg	atg	3863
	Ala	Val	Ser	Arg	Ser	Gln	Arg	Arg	Gly	Arg	Thr	Gly	Arg	Gly	Arg	Met	
				675					680					685			
10	ggc	att	tac	agg	ttt	gtg	act	cca	gga	gaa	cgg	ccc	tcg	ggc	atg	ttc	3911
	Gly	Ile	Tyr	Arg	Phe	Val	Thr	Pro	Gly	Glu	Arg	Pro	Ser	Gly	Met	Phe	
			690					695					700				
15	gat	tcc	tcg	gtt	ctg	tgc	gag	tgc	tat	gac	gcg	ggc	tgt	gct	tgg	tac	3959
	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	Gly	Cys	Ala	Trp	Tyr	
		705					710					715					
20	gag	ctc	acg	ccc	gcc	gag	acc	tca	gtt	agg	ttg	cgg	gct	tac	cta	aac	4007
	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Ser	Val	Arg	Leu	Arg	Ala	Tyr	Leu	Asn	
		720				725				730						735	
25	aca	cca	ggg	ttg	ccc	gtc	tgc	cag	gac	cat	ctg	gag	ttc	tgg	gag	agc	4055
	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	Glu	Phe	Trp	Glu	Ser	
					740					745					750		
30	gtc	ttt	aca	ggc	ctc	acc	cac	ata	gac	gcc	cat	ttc	ttg	tcc	cag	act	4103
	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His	Phe	Leu	Ser	Gln	Thr	
				755					760					765			
35	aag	cag	gca	gga	gac	aac	ttc	ccc	tac	ctg	gta	gca	tac	cag	gct	acg	4151
	Lys	Gln	Ala	Gly	Asp	Asn	Phe	Pro	Tyr	Leu	Val	Ala	Tyr	Gln	Ala	Thr	
			770					775					780				
40	gtg	tgc	gcc	agg	gct	cag	gct	cca	cct	cca	tcg	tgg	gac	caa	atg	tgg	4199
	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp	
		785				790						795					
45	aag	tgt	ctc	ata	cgg	cta	aag	cct	acg	ctg	cac	ggg	cca	acg	ccc	ctg	4247
	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	Gly	Pro	Thr	Pro	Leu	
		800				805					810					815	
50	ctg	tat	agg	ctg	gga	gcc	gtt	caa	aac	gag	ggt	act	acc	aca	cac	ccc	4295
	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Val	Thr	Thr	Thr	His	Pro	
					820					825					830		
55	ata	acc	aaa	tac	atc	atg	gca	tgc	atg	tcg	gct	gac	ctg	gag	gtc	gtc	4343
	Ile	Thr	Lys	Tyr	Ile	Met	Ala	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val	
				835					840					845			
60	acg	agc	acc	tgg	gtg	ctg	gta	ggc	gga	gtc	cta	gca	gct	ctg	gcc	gcg	4391
	Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	Ala	Ala	Leu	Ala	Ala	
				850				855					860				
65	tat	tgc	ctg	aca	aca	ggc	agc	gtg	gtc	att	gtg	ggc	agg	atc	atc	ttg	4439
	Tyr	Cys	Leu	Thr	Thr	Gly	Ser	Val	Val	Ile	Val	Gly	Arg	Ile	Ile	Leu	
		865				870						875					
70	tcc	gga	aag	ccg	gcc	atc	att	ccc	gac	agg	gaa	gtc	ctt	tac	cgg	gag	4487
	Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu	Val	Leu	Tyr	Arg	Glu	

	880		885		890		895	
5	ttc gat gag atg gaa gag tgc gcc tca cac ctc cct tac atc gaa cag						4535	
	Phe Asp Glu Met Glu Glu Cys Ala Ser His Leu Pro Tyr Ile Glu Gln							
		900			905		910	
10	gga atg cag ctc gcc gaa caa ttc aaa cag aag gca atc ggg ttg ctg						4583	
	Gly Met Gln Leu Ala Glu Gln Phe Lys Gln Lys Ala Ile Gly Leu Leu							
		915			920		925	
15	caa aca gcc acc aag caa gcg gag gct gct gct ccc gtg gtg gaa tcc						4631	
	Gln Thr Ala Thr Lys Gln Ala Glu Ala Ala Pro Val Val Glu Ser							
		930			935		940	
20	aag tgg cgg acc ctc gaa gcc ttc tgg gcg aag cat atg tgg aat ttc						4679	
	Lys Trp Arg Thr Leu Glu Ala Phe Trp Ala Lys His Met Trp Asn Phe							
		945			950		955	
25	atc agc ggg ata caa tat tta gca ggc ttg tcc act ctg cct ggc aac						4727	
	Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn							
		960			965		970	975
30	ccc gcg ata gca tca ctg atg gca ttc aca gcc tct atc acc agc ccg						4775	
	Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ser Ile Thr Ser Pro							
		980			985		990	
35	ctc acc acc caa cat acc ctc ctg ttt aac atc ctg ggg gga tgg gtg						4823	
	Leu Thr Thr Gln His Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val							
		995			1000		1005	
40	gcc gcc caa ctt gct cct ccc agc gct gct tct gct ttc gta ggc gcc						4871	
	Ala Ala Gln Leu Ala Pro Pro Ser Ala Ala Ser Ala Phe Val Gly Ala							
		1010			1015		1020	
45	ggc atc gct gga gcg gct gtt ggc agc ata ggc ctt ggg aag gtg ctt						4919	
	Gly Ile Ala Gly Ala Ala Val Gly Ser Ile Gly Leu Gly Lys Val Leu							
		1025			1030		1035	
50	gtg gat att ttg gca ggt tat gga gca ggg gtg gca ggc gcg ctc gtg						4967	
	Val Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val							
		1040			1045		1050	1055
55	gcc ttt aag gtc atg agc ggc gag atg ccc tcc acc gag gac ctg gtt						5015	
	Ala Phe Lys Val Met Ser Gly Glu Met Pro Ser Thr Glu Asp Leu Val							
		1060			1065		1070	
60	aac cta ctc cct gct atc ctc tcc cct ggc gcc cta gtc gtc ggg gtc						5063	
	Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val							
		1075			1080		1085	
65	gtg tgc gca gcg ata ctg cgt cgg cac gtg ggc cca ggg gag ggg gct						5111	
	Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala							
		1090			1095		1100	
70	gtg cag tgg atg aac cgg ctg ata gcg ttc gct tcg cgg ggt aac cac						5159	
	Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His							
		1105			1110		1115	

	gtc tcc ccc acg cac tat gtg cct gag agc gac gct gca gca cgt gtc	5207
	Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val	
	1120 1125 1130 1135	
5	act cag atc ctc tct agt ctt acc atc act cag ctg ctg aag agg ctt	5255
	Thr Gln Ile Leu Ser Ser Leu Thr Ile Thr Gln Leu Leu Lys Arg Leu	
	1140 1145 1150	
10	cac cag tgg atc aac gag gac tgc tcc acg cca tgc tcc ggc tcg tgg	5303
	His Gln Trp Ile Asn Glu Asp Cys Ser Thr Pro Cys Ser Gly Ser Trp	
	1155 1160 1165	
15	cta aga gat gtt tgg gat tgg ata tgc acg gtg ttg act gat ttc aag	5351
	Leu Arg Asp Val Trp Asp Trp Ile Cys Thr Val Leu Thr Asp Phe Lys	
	1170 1175 1180	
20	acc tgg ctc cag tcc aag ctc ctg ccg cga ttg ccg gga gtc ccc ttc	5399
	Thr Trp Leu Gln Ser Lys Leu Leu Pro Arg Leu Pro Gly Val Pro Phe	
	1185 1190 1195	
25	ttc tca tgt caa cgt ggg tac aag gga gtc tgg cgg ggc gac ggc atc	5447
	Phe Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile	
	1200 1205 1210 1215	
	atg caa acc acc tgc cca tgt gga gca cag atc acc gga cat gtg aaa	5495
	Met Gln Thr Thr Cys Pro Cys Gly Ala Gln Ile Thr Gly His Val Lys	
	1220 1225 1230	
30	aac ggt tcc atg agg atc gtg ggg cct agg acc tgt agt aac acg tgg	5543
	Asn Gly Ser Met Arg Ile Val Gly Pro Arg Thr Cys Ser Asn Thr Trp	
	1235 1240 1245	
35	cat gga aca ttc ccc att aac gcg tac acc acg ggc ccc tgc acg ccc	5591
	His Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro	
	1250 1255 1260	
40	tcc ccg gcg cca aat tat tct agg gcg ctg tgg cgg gtg gct gct gag	5639
	Ser Pro Ala Pro Asn Tyr Ser Arg Ala Leu Trp Arg Val Ala Ala Glu	
	1265 1270 1275	
45	gag tac gtg gag gtt acg ccg gtg ggg gat ttc cac tac gtg acg ggc	5687
	Glu Tyr Val Glu Val Thr Arg Val Gly Asp Phe His Tyr Val Thr Gly	
	1280 1285 1290 1295	
	atg acc act gac aac gta aag tgc ccg tgt cag gtt ccg gcc ccc gaa	5735
	Met Thr Thr Asp Asn Val Lys Cys Pro Cys Gln Val Pro Ala Pro Glu	
	1300 1305 1310	
50	ttc ttc aca gaa gtg gat ggg gtg ccg ttg cac agg tac gct cca gcg	5783
	Phe Phe Thr Glu Val Asp Gly Val Arg Leu His Arg Tyr Ala Pro Ala	
	1315 1320 1325	
55	tgc aaa ccc ctc cta ccg gag gag gtc aca ttc ctg gtc ggg ctc aat	5831
	Cys Lys Pro Leu Leu Arg Glu Glu Val Thr Phe Leu Val Gly Leu Asn	
	1330 1335 1340	

	caa tac ctg gtt ggg tca cag ctc cca tgc gag ccc gaa ccg gac gta	5879
	Gln Tyr Leu Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val	
	1345 1350 1355	
5	gca gtg ctc act tcc atg ctc acc gac ccc tcc cac att acg gcg gag	5927
	Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu	
	1360 1365 1370 1375	
10	acg gct aag cgt agg ctg gcc agg gga tct ccc ccc tcc ttg gcc agc	5975
	Thr Ala Lys Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Leu Ala Ser	
	1380 1385 1390	
15	tca tca gct agc cag ctg tct gcg cct tcc ttg aag gca aca tgc act	6023
	Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr	
	1395 1400 1405	
20	acc cgt cat gac tcc ccg gac gct gac ctc atc gag gcc aac ctc ctg	6071
	Thr Arg His Asp Ser Pro Asp Ala Asp Leu Ile Glu Ala Asn Leu Leu	
	1410 1415 1420	
25	tgg cgg cag gag atg ggc ggg aac atc acc cgc gtg gag tca gaa aat	6119
	Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn	
	1425 1430 1435	
30	aag gta gta att ttg gac tct ttc gag ccg ctc caa gcg gag gag gat	6167
	Lys Val Val Ile Leu Asp Ser Phe Glu Pro Leu Gln Ala Glu Glu Asp	
	1440 1445 1450 1455	
35	gag agg gaa gta tcc gtt ccg gcg gag atc ctg cgg agg tcc agg aaa	6215
	Glu Arg Glu Val Ser Val Pro Ala Glu Ile Leu Arg Arg Ser Arg Lys	
	1460 1465 1470	
40	ttc cct cga gcg atg ccc ata tgg gca cgc ccg gat tac aac cct cca	6263
	Phe Pro Arg Ala Met Pro Ile Trp Ala Arg Pro Asp Tyr Asn Pro Pro	
	1475 1480 1485	
45	ctg tta gag tcc tgg aag gac ccg gac tac gtc cct cca gtg gta cac	6311
	Leu Leu Glu Ser Trp Lys Asp Pro Asp Tyr Val Pro Pro Val Val His	
	1490 1495 1500	
50	ggg tgt cca ttg ccg cct gcc aag gcc cct ccg ata cca cct cca cgg	6359
	Gly Cys Pro Leu Pro Pro Ala Lys Ala Pro Pro Ile Pro Pro Pro Arg	
	1505 1510 1515	
55	agg aag agg acg gtt gtc ctg tca gaa tct acc gtg tct tct gcc ttg	6407
	Arg Lys Arg Thr Val Val Leu Ser Glu Ser Thr Val Ser Ser Ala Leu	
	1520 1525 1530 1535	
60	gcg gag ctc gcc aca aag acc ttc ggc agc tcc gaa tcg tcg gcc gtc	6455
	Ala Glu Leu Ala Thr Lys Thr Phe Gly Ser Ser Glu Ser Ser Ala Val	
	1540 1545 1550	
65	gac agc ggc acg gca acg gcc tct cct gac cag ccc tcc gac gac ggc	6503
	Asp Ser Gly Thr Ala Thr Ala Ser Pro Asp Gln Pro Ser Asp Asp Gly	
	1555 1560 1565	
70	gac gcg gga tcc gac gtt gag tcg tac tcc tcc atg ccc ccc ctt gag	6551

	Asp	Ala	Gly	Ser	Asp	Val	Glu	Ser	Tyr	Ser	Ser	Met	Pro	Pro	Leu	Glu	
			1570					1575					1580				
5	ggg	gag	ccg	ggg	gat	ccc	gat	ctc	agc	gac	ggg	tct	tgg	tct	acc	gta	6599
	Gly	Glu	Pro	Gly	Asp	Pro	Asp	Leu	Ser	Asp	Gly	Ser	Trp	Ser	Thr	Val	
			1585					1590					1595				
10	agc	gag	gag	gct	agt	gag	gac	gtc	gtc	tgc	tgc	tcg	atg	tcc	tac	aca	6647
	Ser	Glu	Glu	Ala	Ser	Glu	Asp	Val	Val	Cys	Cys	Ser	Met	Ser	Tyr	Thr	
			1600					1605					1610				1615
15	tgg	aca	ggc	gcc	ctg	atc	acg	cca	tgc	gct	gcg	gag	gaa	acc	aag	ctg	6695
	Trp	Thr	Gly	Ala	Leu	Ile	Thr	Pro	Cys	Ala	Ala	Glu	Glu	Thr	Lys	Leu	
					1620					1625						1630	
20	ccc	atc	aat	gca	ctg	agc	aac	tct	ttg	ctc	cgt	cac	cac	aac	ttg	gtc	6743
	Pro	Ile	Asn	Ala	Leu	Ser	Asn	Ser	Leu	Leu	Arg	His	His	Asn	Leu	Val	
				1635					1640					1645			
25	tat	gct	aca	aca	tct	cgc	agc	gca	agc	ctg	cgg	cag	aag	aag	gtc	acc	6791
	Tyr	Ala	Thr	Thr	Ser	Arg	Ser	Ala	Ser	Leu	Arg	Gln	Lys	Lys	Val	Thr	
				1650					1655					1660			
30	ttt	gac	aga	ctg	cag	gtc	ctg	gac	gac	cac	tac	cgg	gac	gtg	ctc	aag	6839
	Phe	Asp	Arg	Leu	Gln	Val	Leu	Asp	Asp	His	Tyr	Arg	Asp	Val	Leu	Lys	
				1665				1670					1675				
35	gag	atg	aag	gcg	aag	gcg	tcc	aca	gtt	aag	gct	aaa	ctt	cta	tcc	gtg	6887
	Glu	Met	Lys	Ala	Lys	Ala	Ser	Thr	Val	Lys	Ala	Lys	Leu	Leu	Ser	Val	
				1680				1685				1690				1695	
40	gag	gaa	gcc	tgt	aag	ctg	acg	ccc	cca	cat	tcg	gcc	aga	tct	aaa	ttt	6935
	Glu	Glu	Ala	Cys	Lys	Leu	Thr	Pro	Pro	His	Ser	Ala	Arg	Ser	Lys	Phe	
					1700					1705					1710		
45	ggc	tat	ggg	gca	aag	gac	gtc	cgg	aac	cta	tcc	agc	aag	gcc	gtt	aac	6983
	Gly	Tyr	Gly	Ala	Lys	Asp	Val	Arg	Asn	Leu	Ser	Ser	Lys	Ala	Val	Asn	
				1715					1720					1725			
50	cac	atc	cgc	tcc	gtg	tgg	aag	gac	ttg	ctg	gaa	gac	act	gag	aca	cca	7031
	His	Ile	Arg	Ser	Val	Trp	Lys	Asp	Leu	Leu	Glu	Asp	Thr	Glu	Thr	Pro	
				1730				1735					1740				
55	att	gac	acc	acc	atc	atg	gca	aaa	aat	gag	gtt	ttc	tgc	gtc	caa	cca	7079
	Ile	Asp	Thr	Thr	Ile	Met	Ala	Lys	Asn	Glu	Val	Phe	Cys	Val	Gln	Pro	
				1745				1750					1755				
60	gag	aag	ggg	ggc	cgc	aag	cca	gct	cgc	ctt	atc	gta	ttc	cca	gat	ttg	7127
	Glu	Lys	Gly	Gly	Arg	Lys	Pro	Ala	Arg	Leu	Ile	Val	Phe	Pro	Asp	Leu	
				1760				1765				1770				1775	
65	ggg	gtt	cgt	gtg	tgc	gag	aaa	atg	gcc	ctt	tac	gat	gtg	gtc	tcc	acc	7175
	Gly	Val	Arg	Val	Cys	Glu	Lys	Met	Ala	Leu	Tyr	Asp	Val	Val	Ser	Thr	
					1780					1785						1790	
70	ctc	cct	cag	gcc	gtg	atg	ggc	tct	tca	tac	gga	ttc	caa	tac	tct	cct	7223
	Leu	Pro	Gln	Ala	Val	Met	Gly	Ser	Ser	Tyr	Gly	Phe	Gln	Tyr	Ser	Pro	

	1795	1800	1805	
5	gga cag cgg gtc gag ttc ctg gtg aat gcc tgg aaa gcg aag aaa tgc Gly Gln Arg Val Glu Phe Leu Val Asn Ala Trp Lys Ala Lys Lys Cys 1810 1815 1820			7271
10	cct atg ggc ttc gca tat gac acc cgc tgt ttt gac tca acg gtc act Pro Met Gly Phe Ala Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val Thr 1825 1830 1835			7319
	gag aat gac atc cgt gtt gag gag tca atc tac caa tgt tgt gac ttg Glu Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln Cys Cys Asp Leu 1840 1845 1850 1855			7367
15	gcc ccc gaa gcc aga cag gcc ata agg tgc ctc aca gag cgg ctt tac Ala Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr Glu Arg Leu Tyr 1860 1865 1870			7415
20	atc ggg ggc ccc ctg act aat tct aaa ggg cag aac tgc ggc tat cgc Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn Cys Gly Tyr Arg 1875 1880 1885			7463
25	cgg tgc cgc gcg agc ggt gta ctg acg acc agc tgc ggt aat acc ctc Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr Leu 1890 1895 1900			7511
30	aca tgt tac ttg aag gcc gct gcg gcc tgt cga gct gcg aag ctc cag Thr Cys Tyr Leu Lys Ala Ala Ala Ala Cys Arg Ala Ala Lys Leu Gln 1905 1910 1915			7559
	gac tgc acg atg ctc gta tgc gga gac gac ctt gtc gtt atc tgt gaa Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys Glu 1920 1925 1930 1935			7607
35	agc gcg ggg acc caa gag gac gag gcg agc cta cgg gcc ttc acg gag Ser Ala Gly Thr Gln Glu Asp Glu Ala Ser Leu Arg Ala Phe Thr Glu 1940 1945 1950			7655
40	gct atg act aga tac tct gcc ccc cct ggg gac ccg ccc aaa cca gaa Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Lys Pro Glu 1955 1960 1965			7703
45	tac gac ttg gag ttg ata aca tca tgc tcc tcc aat gtg tca gtc gcg Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val Ala 1970 1975 1980			7751
50	cac gat gca tct ggc aaa agg gtg tac tat ctc acc cgt gac ccc acc His Asp Ala Ser Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro Thr 1985 1990 1995			7799
	acc ccc ctt gcg cgg gct gcg tgg gag aca gct aga cac act cca gtc Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro Val 2000 2005 2010 2015			7847
55	aat tcc tgg cta ggc aac atc atc atg tat gcg ccc acc ttg tgg gca Asn Ser Trp Leu Gly Asn Ile Ile Met Tyr Ala Pro Thr Leu Trp Ala 2020 2025 2030			7895

	agg atg atc ctg atg act cat ttc tcc atc ctt cta gct cag gaa	7943
	Arg Met Ile Leu Met Thr His Phe Phe Ser Ile Leu Leu Ala Gln Glu	
	2035 2040 2045	
5	caa ctt gaa aaa gcc cta gat tgt cag atc tac ggg gcc tgt tac tcc	7991
	Gln Leu Glu Lys Ala Leu Asp Cys Gln Ile Tyr Gly Ala Cys Tyr Ser	
	2050 2055 2060	
10	att gag cca ctt gac cta cct cag atc att caa cga ctc cac ggc ctt	8039
	Ile Glu Pro Leu Asp Leu Pro Gln Ile Ile Gln Arg Leu His Gly Leu	
	2065 2070 2075	
15	agc gca ttt tca ctc cat agt tac tct cca ggt gag atc aat agg gtg	8087
	Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg Val	
	2080 2085 2090 2095	
20	gct tca tgc ctc agg aaa ctt ggg gta ccg ccc ttg cga gtc tgg aga	8135
	Ala Ser Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Val Trp Arg	
	2100 2105 2110	
25	cat cgg gcc aga agt gtc cgc gct agg cta ctg tcc cag ggg ggg agg	8183
	His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ser Gln Gly Gly Arg	
	2115 2120 2125	
30	gct gcc act tgt ggc aag tac ctc ttc aac tgg gca gta agg acc aag	8231
	Ala Ala Thr Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr Lys	
	2130 2135 2140	
35	ctc aaa ctc act cca atc ccg gct gcg tcc cag ttg gat tta tcc agc	8279
	Leu Lys Leu Thr Pro Ile Pro Ala Ala Ser Gln Leu Asp Leu Ser Ser	
	2145 2150 2155	
40	tgg ttc gtt gct ggt tac agc ggg gga gac ata tat cac agc ctg tct	8327
	Trp Phe Val Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Leu Ser	
	2160 2165 2170 2175	
45	cgt gcc cga ccc cgc tgg ttc atg tgg tgc cta ctc cta ctt tct gta	8375
	Arg Ala Arg Pro Arg Trp Phe Met Trp Cys Leu Leu Leu Leu Ser Val	
	2180 2185 2190	
50	ggg gta ggc atc tat cta ctc ccc aac cga tga acggggagct aaacactcca	8428
	Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg *	
	2195 2200	
55	ggccaatagg ccatactggt tttttccctt tttttttttt tttttttttt tttttttttt	8488
	tttttttttt tttttctcctt ttttttttct cttttttttcc ttttctttcc tttgggtggct	8548
	ccatcttagc cctagtcacg gctagctgtg aaagggtccgt gagccgcttg actgcagaga	8608
	gtgctgatac tggcctctct gcagatcaag t	8639
	<210> 2	
	<211> 8642	
	<212> DNA	
	<213> HCV	
	<220>	
	<221> CDS	

<222> (1802)...(8407)

<221> variation

<222> 6268

5 <223> r = a or g

<221> variation

<222> 4446

<223> r = a or g

10

<400> 2

15

20

25

30

35

40

45

50

55

```
accagccccc gattgggggc gacactccac catagatcac tcccctgtga ggaactactg 60
tcttcacgca gaaagcgtct agccatggcg ttagtatgag tgtcgtgcag cctccaggac 120
ccccctccc gggagagcca tagtggtctg cggaaccggt gagtacaccg gaattgccag 180
gacgaccggg tcctttcttg gatcaaccgc ctcaatgcct ggagatttgg gcgtgcccc 240
gcgagactgc tagccgagta gtgttggtgc gcgaaaggcc ttgtggtact gcctgatagg 300
gtgcttgcca gtgccccggg aggtctcgta gaccgtgcac catgagcacg aatcctaaac 360
ctcaaagaaa aaccaaaggg cgcgccatga ttgaacaaga tggattgcac gcaggttctc 420
cggccgcttg ggtggagagg ctattcggct atgactgggc acaacagaca atcggctgct 480
ctgatgccgc cgtgttccgg ctgtcagcgc aggggcgccc ggttcttttt gtcaagaccg 540
acctgtccgg tgccctgaat gaactgcagg acgaggcagc gcggctatcg tggctggcca 600
cgacgggcgt tccttgccga gctgtgctcg acgttgtcac tgaagcggga agggactggc 660
tgctattggg cgaagtgccg gggcaggatc tcctgtcatc tcaccttgct cctgccgaga 720
aagtatccat catggctgat gcaatgcggc ggctgcatac gcttgatccg gctacctgcc 780
cattcgacca ccaagcgaaa catcgcatcg agcgagcacg tactcggatg gaagccggtc 840
ttgtcgatca ggatgatctg gacgaagagc atcaggggct cgcgccagcc gaactgttcg 900
ccaggctcaa ggcgcgcgatg cccgacggcg aggatctcgt cgtgacccat ggcgatgcct 960
gcttgccgaa tatcatggtg gaaaatggcc gcttttctgg attcatcgac tgtggccggc 1020
tggtgtgtgg ggaccgctat caggacatag cgttggctac ccgtgatatt gctgaagagc 1080
ttggcggcga atgggctgac cgcttcctcg tgetttacgg tatcgccgct cccgattcgc 1140
agcgcacgca cttctatcgc cttcttgacg agttcttctg agttcgcgcc cagatgttaa 1200
cagaccacaa cggtttccct ctagcgggat caattccgcc ccccccccta acgttactgg 1260
ccgaagccgc ttggaataag gccggtgtgc gtttgtctat atgttatatt ccaccatatt 1320
gccgtctttt ggcaatgtga gggcccgaa acctggccct gtcttcttga cgagcattcc 1380
taggggtctt tcccctctcg ccaaaggaat gcaaggctctg ttgaatgtcg tgaagggaagc 1440
agttcctctg gaagccttct gaagacaaac aacgtctgta gcgacccttt gcaggcagcg 1500
gaacccccca cctggcgaca ggtgcctctg cggccaaaag ccacgtgtat aagatacacc 1560
tgcaaaggcg gcacaacccc agtgccacgt tgtgagttgg atagttgtgg aaagagtcaa 1620
atggctctcc tcaagcgtat tcaacaaggg gctgaaggat gccagaagg taccctattg 1680
tatgggatct gatctggggc ctcggtgcac atgctttaca tgtgtttagt cgaggttaaa 1740
aaacgtctag gcccccgaa ccacggggac gtggttttcc tttgaaaaac acgataatac 1800
c atg gac cgg gag atg gca gca tcg tgc gga ggc gcg gtt ttc gta ggt 1849
Met Asp Arg Glu Met Ala Ala Ser Cys Gly Gly Ala Val Phe Val Gly
1 5 10 15
ctg ata ctc ttg acc ttg tca ccg cac tat aag ctg ttc ctc gct agg 1897
Leu Ile Leu Leu Thr Leu Ser Pro His Tyr Lys Leu Phe Leu Ala Arg
20 25 30
ctc ata tgg tgg tta caa tat ttt atc acc agg gcc gag gca cac ttg 1945
Leu Ile Trp Trp Leu Gln Tyr Phe Ile Thr Arg Ala Glu Ala His Leu
35 40 45
caa gtg tgg atc ccc ccc ctc aac gtt cgg ggg ggc cgc gat gcc gtc 1993
Gln Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Val
50 55 60
```

	atc ctc ctc acg tgc gcg atc cac cca gag cta atc ttt acc atc acc	2041
	Ile Leu Leu Thr Cys Ala Ile His Pro Glu Leu Ile Phe Thr Ile Thr	
	65 70 75 80	
5	aaa atc ttg ctc gcc ata ctc ggt cca ctc atg gtg ctc cag gct ggt	2089
	Lys Ile Leu Leu Ala Ile Leu Gly Pro Leu Met Val Leu Gln Ala Gly	
	85 90 95	
10	ata acc aaa gtg ccg tac ttc gtg cgc gca cac ggg ctc att cgt gca	2137
	Ile Thr Lys Val Pro Tyr Phe Val Arg Ala His Gly Leu Ile Arg Ala	
	100 105 110	
15	tgc atg ctg gtg cgg aag gtt gct ggg ggt cat tat gtc caa atg gct	2185
	Cys Met Leu Val Arg Lys Val Ala Gly Gly His Tyr Val Gln Met Ala	
	115 120 125	
20	ctc atg aag ttg gcc gca ctg aca ggt acg tac gtt tat gac cat ctc	2233
	Leu Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu	
	130 135 140	
	acc cca ctg cgg gac tgg gcc cac gcg ggc cta cga gac ctt gcg gtg	2281
	Thr Pro Leu Arg Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val	
	145 150 155 160	
25	gca gtt gag ccc gtc gtc ttc tct gat atg gag acc aag gtt atc acc	2329
	Ala Val Glu Pro Val Val Phe Ser Asp Met Glu Thr Lys Val Ile Thr	
	165 170 175	
30	tgg ggg gca gac acc gcg gcg tgt ggg gac atc atc ttg ggc ctg ccc	2377
	Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Leu Gly Leu Pro	
	180 185 190	
35	gtc tcc gcc cgc agg ggg agg gag ata cat ctg gga ccg gca gac agc	2425
	Val Ser Ala Arg Arg Gly Arg Glu Ile His Leu Gly Pro Ala Asp Ser	
	195 200 205	
40	ctt gaa ggg cag ggg tgg cga ctc ctc gcg cct att acg gcc tac tcc	2473
	Leu Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser	
	210 215 220	
	caa cag acg cga ggc cta ctt ggc tgc atc atc act agc ctc aca ggc	2521
	Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly	
	225 230 235 240	
45	cgg gac agg aac cag gtc gag ggg gag gtc caa gtg gtc tcc acc gca	2569
	Arg Asp Arg Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala	
	245 250 255	
50	aca caa tct ttc ctg gcg acc tgc gtc aat ggc gtg tgt tgg act gtc	2617
	Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val	
	260 265 270	
55	tat cat ggt gcc ggc tca aag acc ctt gcc ggc cca aag ggc cca atc	2665
	Tyr His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile	
	275 280 285	
	acc caa atg tac acc aat gtg gac cag gac ctc gtc ggc tgg caa gcg	2713

	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp	Gln	Ala	
	290						295					300					
5	ccc	ccc	ggg	gcg	cgt	tcc	ttg	aca	cca	tgc	acc	tgc	ggc	agc	tcg	gac	2761
	Pro	Pro	Gly	Ala	Arg	Ser	Leu	Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp	
	305					310					315					320	
10	ctt	tac	ttg	gtc	acg	agg	cat	gcc	gat	gtc	att	ccg	gtg	cgc	cgg	cgg	2809
	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg	Arg	Arg	
					325					330					335		
15	ggc	gac	agc	agg	ggg	agc	cta	ctc	tcc	ccc	agg	ccc	gtc	tcc	tac	ttg	2857
	Gly	Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser	Tyr	Leu	
				340					345					350			
20	aag	ggc	tct	tcg	ggc	ggt	cca	ctg	ctc	tgc	ccc	tcg	ggg	cac	gct	gtg	2905
	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His	Ala	Val	
			355					360					365				
25	ggc	atc	ttt	cgg	gct	gcc	gtg	tgc	acc	cga	ggg	gtt	gcg	aag	gcg	gtg	2953
	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys	Ala	Val	
		370					375					380					
30	gac	ttt	gta	ccc	gtc	gag	tct	atg	gaa	acc	act	atg	cgg	tcc	ccg	gtc	3001
	Asp	Phe	Val	Pro	Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg	Ser	Pro	Val	
	385					390					395					400	
35	ttc	acg	gac	aac	tcg	tcc	cct	ccg	gcc	gta	ccg	cag	aca	ttc	cag	gtg	3049
	Phe	Thr	Asp	Asn	Ser	Ser	Pro	Pro	Ala	Val	Pro	Gln	Thr	Phe	Gln	Val	
					405					410					415		
40	gcc	cat	cta	cac	gcc	cct	act	ggt	agc	ggc	aag	agc	act	aag	gtg	ccg	3097
	Ala	His	Leu	His	Ala	Pro	Thr	Gly	Ser	Gly	Lys	Ser	Thr	Lys	Val	Pro	
				420					425					430			
45	gct	gcg	tat	gca	gcc	caa	ggg	tat	aag	gtg	ctt	gtc	ctg	aac	ccg	tcc	3145
	Ala	Ala	Tyr	Ala	Ala	Gln	Gly	Tyr	Lys	Val	Leu	Val	Leu	Asn	Pro	Ser	
			435				440						445				
50	gtc	gcc	gcc	acc	cta	ggt	ttc	ggg	gcg	tat	atg	tct	aag	gca	cat	ggt	3193
	Val	Ala	Ala	Thr	Leu	Gly	Phe	Gly	Ala	Tyr	Met	Ser	Lys	Ala	His	Gly	
		450					455					460					
55	atc	gac	cct	aac	atc	aga	acc	ggg	gta	agg	acc	atc	acc	acg	ggt	gcc	3241
	Ile	Asp	Pro	Asn	Ile	Arg	Thr	Gly	Val	Arg	Thr	Ile	Thr	Thr	Gly	Ala	
	465					470					475					480	
60	ccc	atc	acg	tac	tcc	acc	tat	ggc	aag	ttt	ctt	gcc	gac	ggt	ggt	tgc	3289
	Pro	Ile	Thr	Tyr	Ser	Thr	Tyr	Gly	Lys	Phe	Leu	Ala	Asp	Gly	Gly	Cys	
					485					490					495		
65	tct	ggg	ggc	gcc	tat	gac	atc	ata	ata	tgt	gat	gag	tgc	cac	tca	act	3337
	Ser	Gly	Gly	Ala	Tyr	Asp	Ile	Ile	Ile	Cys	Asp	Glu	Cys	His	Ser	Thr	
				500					505					510			
70	gac	tcg	acc	act	atc	ctg	ggc	atc	ggc	aca	gtc	ctg	gac	caa	gcg	gag	3385
	Asp	Ser	Thr	Thr	Ile	Leu	Gly	Ile	Gly	Thr	Val	Leu	Asp	Gln	Ala	Glu	

	515	520	525	
5	acg gct gga gcg cga ctc gtc gtg ctc gcc acc gct acg cct ccg gga Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro Gly 530 535 540			3433
10	tcg gtc acc gtg cca cat cca aac atc gag gag gtg gct ctg tcc agc Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser Ser 545 550 555 560			3481
15	act gga gaa atc ccc ttt tat ggc aaa gcc atc ccc atc gag acc atc Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Ile Glu Thr Ile 565 570 575			3529
20	aag ggg ggg agg cac ctc att ttc tgc cat tcc aag aag aaa tgt gat Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys Asp 580 585 590			3577
25	gag ctc gcc gcg aag ctg tcc ggc ctc gga ctc aat gct gta gca tat Glu Leu Ala Ala Lys Leu Ser Gly Leu Gly Leu Asn Ala Val Ala Tyr 595 600 605			3625
30	tac cgg ggc ctt gat gta tcc gtc ata cca act agc gga gac gtc att Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val Ile 610 615 620			3673
35	gtc gta gca acg gac gct cta atg acg ggc ttt acc ggc gat ttc gac Val Val Ala Thr Asp Ala Leu Met Thr Gly Phe Thr Gly Asp Phe Asp 625 630 635 640			3721
40	tca gtg atc gac tgc aat aca tgt gtc acc cag aca gtc gac ttc agc Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser 645 650 655			3769
45	ctg gac ccg acc ttc acc att gag acg acg acc gtg cca caa gac gcg Leu Asp Pro Thr Phe Thr Ile Glu Thr Thr Thr Val Pro Gln Asp Ala 660 665 670			3817
50	gtg tca cgc tcg cag cgg cga ggc agg act ggt agg ggc agg atg ggc Val Ser Arg Ser Gln Arg Arg Gly Arg Thr Gly Arg Gly Arg Met Gly 675 680 685			3865
55	att tac agg ttt gtg act cca gga gaa cgg ccc tcg ggc atg ttc gat Ile Tyr Arg Phe Val Thr Pro Gly Glu Arg Pro Ser Gly Met Phe Asp 690 695 700			3913
60	tcc tcg gtt ctg tgc gag tgc tat gac gcg ggc tgt gct tgg tac gag Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu 705 710 715 720			3961
65	ctc acg ccc gcc gag acc tca gtt agg ttg cgg gct tac cta aac aca Leu Thr Pro Ala Glu Thr Ser Val Arg Leu Arg Ala Tyr Leu Asn Thr 725 730 735			4009
70	cca ggg ttg ccc gtc tgc cag gac cat ctg gag ttc tgg gag agc gtc Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Ser Val 740 745 750			4057

	ttt aca ggc ctc acc cac ata gac gcc cat ttc ttg tcc cag act aag	4105
	Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys	
	755 760 765	
5	cag gca gga gac aac ttc ccc tac ctg gta gca tac cag gct acg gtg	4153
	Gln Ala Gly Asp Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val	
	770 775 780	
10	tgc gcc agg gct cag gct cca cct cca tcg tgg gac caa atg tgg aag	4201
	Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp Lys	
	785 790 795 800	
15	tgt ctc ata cgg cta aag cct acg ctg cac ggg cca acg ccc ctg ctg	4249
	Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu	
	805 810 815	
20	tat agg ctg gga gcc gtt caa aac gag gtt act acc aca cac ccc ata	4297
	Tyr Arg Leu Gly Ala Val Gln Asn Glu Val Thr Thr Thr His Pro Ile	
	820 825 830	
25	acc aaa tac atc atg gca tgc atg tcg gct gac ctg gag gtc gtc acg	4345
	Thr Lys Tyr Ile Met Ala Cys Met Ser Ala Asp Leu Glu Val Val Thr	
	835 840 845	
25	agc acc tgg gtg ctg gta ggc gga gtc cta gca gct ctg gcc gcg tat	4393
	Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr	
	850 855 860	
30	tgc ctg aca aca ggc agc gtg gtc att gtg ggc agg atc atc ttg tcc	4441
	Cys Leu Thr Thr Gly Ser Val Val Ile Val Gly Arg Ile Ile Leu Ser	
	865 870 875 880	
35	gga arg ccg gcc atc att ccc gac agg gaa gtc ctt tac cgg gag ttc	4489
	Gly Xaa Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe	
	885 890 895	
40	gat gag atg gaa gag tgc gcc tca cac ctc cct tac atc gaa cag gga	4537
	Asp Glu Met Glu Glu Cys Ala Ser His Leu Pro Tyr Ile Glu Gln Gly	
	900 905 910	
45	atg cag ctc gcc gaa caa ttc aaa cag aag gca atc ggg ttg ctg caa	4585
	Met Gln Leu Ala Glu Gln Phe Lys Gln Lys Ala Ile Gly Leu Leu Gln	
	915 920 925	
45	aca gcc acc aag caa gcg gag gct gct gct ccc gtg gtg gaa tcc aag	4633
	Thr Ala Thr Lys Gln Ala Glu Ala Ala Ala Pro Val Val Glu Ser Lys	
	930 935 940	
50	tgg cgg acc ctc gaa gcc ttc tgg gcg aag cat atg tgg aat ttc atc	4681
	Trp Arg Thr Leu Glu Ala Phe Trp Ala Lys His Met Trp Asn Phe Ile	
	945 950 955 960	
55	agc ggg ata caa tat tta gca ggc ttg tcc act ctg cct ggc aac ccc	4729
	Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn Pro	
	965 970 975	

	gcg ata gca tca ctg atg gca ttc aca gcc tct atc acc agc ccg ctc	4777
	Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ser Ile Thr Ser Pro Leu	
	980 985 990	
5	acc acc caa cat acc ctc ctg ttt aac atc ctg ggg gga tgg gtg gcc	4825
	Thr Thr Gln His Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Ala	
	995 1000 1005	
10	gcc caa ctt gct cct ccc agc gct gct tct gct ttc gta ggc gcc ggc	4873
	Ala Gln Leu Ala Pro Pro Ser Ala Ala Ser Ala Phe Val Gly Ala Gly	
	1010 1015 1020	
15	atc gct gga gcg gct gtt ggc agc ata ggc ctt ggg aag gtg ctt gtg	4921
	Ile Ala Gly Ala Ala Val Gly Ser Ile Gly Leu Gly Lys Val Leu Val	
	1025 1030 1035 1040	
20	gat att ttg gca ggt tat gga gca ggg gtg gca ggc gcg ctc gtg gcc	4969
	Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val Ala	
	1045 1050 1055	
	ttt aag gtc atg agc ggc gag atg ccc tcc acc gag gac ctg gtt aac	5017
	Phe Lys Val Met Ser Gly Glu Met Pro Ser Thr Glu Asp Leu Val Asn	
	1060 1065 1070	
25	cta ctc cct gct atc ctc tcc cct ggc gcc cta gtc gtc ggg gtc gtg	5065
	Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val Val	
	1075 1080 1085	
30	tgc gca gcg ata ctg cgt cgg cac gtg ggc cca ggg gag ggg gct gtg	5113
	Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala Val	
	1090 1095 1100	
35	cag tgg atg aac cgg ctg ata gcg ttc gct tcg cgg ggt aac cac gtc	5161
	Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His Val	
	1105 1110 1115 1120	
40	tcc ccc acg cac tat gtg cct gag agc gac gct gca gca cgt gtc act	5209
	Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val Thr	
	1125 1130 1135	
	cag atc ctc tct agt ctt acc atc act cag ctg ctg aag agg ctt cac	5257
	Gln Ile Leu Ser Ser Leu Thr Ile Thr Gln Leu Leu Lys Arg Leu His	
	1140 1145 1150	
45	cag tgg atc aac gag gac tgc tcc acg cca tgc tcc ggc tcg tgg cta	5305
	Gln Trp Ile Asn Glu Asp Cys Ser Thr Pro Cys Ser Gly Ser Trp Leu	
	1155 1160 1165	
50	aga gat gtt tgg gat tgg ata tgc acg gtg ttg act gat ttc aag acc	5353
	Arg Asp Val Trp Asp Trp Ile Cys Thr Val Leu Thr Asp Phe Lys Thr	
	1170 1175 1180	
55	tgg ctc cag tcc aag ctc ctg ccg cga ttg ccg gga gtc ccc ttc ttc	5401
	Trp Leu Gln Ser Lys Leu Leu Pro Arg Leu Pro Gly Val Pro Phe Phe	
	1185 1190 1195 1200	
	tca tgt caa cgt ggg tac aag gga gtc tgg cgg ggc gac ggc atc atg	5449

	Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile Met	
	1205 1210 1215	
5	caa acc acc tgc cca tgt gga gca cag atc acc gga cat gtg aaa aac Gln Thr Thr Cys Pro Cys Gly Ala Gln Ile Thr Gly His Val Lys Asn	5497
	1220 1225 1230	
10	tgt tcc atg agg atc gtg ggg cct agg acc tgt agt aac acg tgg cat Cys Ser Met Arg Ile Val Gly Pro Arg Thr Cys Ser Asn Thr Trp His	5545
	1235 1240 1245	
15	gga aca ttc ccc att aac gcg tac acc acg ggc ccc tgc acg ccc tcc Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro Ser	5593
	1250 1255 1260	
20	ccg gcg cca aat tat tct agg gcg ctg tgg gcg gtg gct gct gag gag Pro Ala Pro Asn Tyr Ser Arg Ala Leu Trp Arg Val Ala Ala Glu Glu	5641
	1265 1270 1275 1280	
25	tac gtg gag gtt acg cgg gtg ggg gat ttc cac tac gtg acg ggc atg Tyr Val Glu Val Thr Arg Val Gly Asp Phe His Tyr Val Thr Gly Met	5689
	1285 1290 1295	
30	acc act gac aac gta aag tgc ccg tgt cag gtt ccg gcc ccc gaa ttc Thr Thr Asp Asn Val Lys Cys Pro Cys Gln Val Pro Ala Pro Glu Phe	5737
	1300 1305 1310	
35	ttc aca gaa gtg gat ggg gtg ccg ttg cac agg tac gct cca gcg tgc Phe Thr Glu Val Asp Gly Val Arg Leu His Arg Tyr Ala Pro Ala Cys	5785
	1315 1320 1325	
40	aaa ccc ctc cta cgg gag gag gtc aca ttc ctg gtc ggg ctc aat caa Lys Pro Leu Leu Arg Glu Glu Val Thr Phe Leu Val Gly Leu Asn Gln	5833
	1330 1335 1340	
45	tac ctg gtt ggg tca cag ctc cca tgc gag ccc gaa ccg gac gta gca Tyr Leu Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val Ala	5881
	1345 1350 1355 1360	
50	gtg ctc act tcc atg ctc acc gac ccc tcc cac att acg gcg gag acg Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu Thr	5929
	1365 1370 1375	
55	gct aag cgt agg ctg gcc agg gga tct ccc ccc tcc ttg gcc agc tca Ala Lys Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Leu Ala Ser Ser	5977
	1380 1385 1390	
60	tca gct agc cag ctg tct gcg cct tcc ttg aag gca aca tgc act acc Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr Thr	6025
	1395 1400 1405	
65	cgt cat gac tcc ccg gac gct gac ctc atc gag gcc aac ctc ctg tgg Arg His Asp Ser Pro Asp Ala Asp Leu Ile Glu Ala Asn Leu Leu Trp	6073
	1410 1415 1420	
70	cgg cag gag atg ggc ggg aac atc acc cgc gtg gag tca gaa aat aag Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn Lys	6121

	1425	1430	1435	1440	
5	gta gta att ttg gac tct ttc gag ccg ctc caa gcg gag gag gat gag Val Val Ile Leu Asp Ser Phe Glu Pro Leu Gln Ala Glu Glu Asp Glu	1445	1450	1455	6169
10	agg gaa gta tcc gtt ccg gcg gag atc ctg cgg agg tcc agg aaa ttc Arg Glu Val Ser Val Pro Ala Glu Ile Leu Arg Arg Ser Arg Lys Phe	1460	1465	1470	6217
	cct cga gcg atg ccc ata tgg gca cgc ccg gat tac aac cct cca ctg Pro Arg Ala Met Pro Ile Trp Ala Arg Pro Asp Tyr Asn Pro Pro Leu	1475	1480	1485	6265
15	ttr gag tcc tgg aag gac ccg gac tac gtc cct cca gtg gta cac ggg Xaa Glu Ser Trp Lys Asp Pro Asp Tyr Val Pro Pro Val Val His Gly	1490	1495	1500	6313
20	tgt cca ttg ccg cct gcc aag gcc cct ccg ata cca cct cca cgg agg Cys Pro Leu Pro Pro Ala Lys Ala Pro Pro Ile Pro Pro Pro Arg Arg	1505	1510	1515	6361
25	aag agg acg gtt gtc ctg tca gaa tct acc gtg tct tct gcc ttg gcg Lys Arg Thr Val Val Leu Ser Glu Ser Thr Val Ser Ser Ala Leu Ala	1525	1530	1535	6409
30	gag ctc gcc aca aag acc ttc ggc agc tcc gaa tcg tcg gcc gtc gac Glu Leu Ala Thr Lys Thr Phe Gly Ser Ser Glu Ser Ser Ala Val Asp	1540	1545	1550	6457
	agc ggc acg gca acg gcc tct cct gac cag ccc tcc gac gac ggc gac Ser Gly Thr Ala Thr Ala Ser Pro Asp Gln Pro Ser Asp Asp Gly Asp	1555	1560	1565	6505
35	gcg gga tcc gac gtt gag tcg tac tcc tcc atg ccc ccc ctt gag ggg Ala Gly Ser Asp Val Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu Gly	1570	1575	1580	6553
40	gag ccg ggg gat ccc gat ctc agc gac ggg tct tgg tct acc gta agc Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val Ser	1585	1590	1595	6601
45	gag gag gct agt gag gac gtc gtc tgc tgc tcg atg tcc tac aca tgg Glu Glu Ala Ser Glu Asp Val Val Cys Cys Ser Met Ser Tyr Thr Trp	1605	1610	1615	6649
50	aca ggc gcc ctg atc acg cca tgc gct gcg gag gaa acc aag ctg ccc Thr Gly Ala Leu Ile Thr Pro Cys Ala Ala Glu Glu Thr Lys Leu Pro	1620	1625	1630	6697
	atc aat gca ctg agc aac tct ttg ctc cgt cac cac aac ttg gtc tat Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu Val Tyr	1635	1640	1645	6745
55	gct aca aca tct cgc agc gca agc ctg cgg cag aag aag gtc acc ttt Ala Thr Thr Ser Arg Ser Ala Ser Leu Arg Gln Lys Lys Val Thr Phe	1650	1655	1660	6793

	gac aga ctg cag gtc ctg gac gac cac tac cgg gac gtg ctc aag gag	6841
	Asp Arg Leu Gln Val Leu Asp Asp His Tyr Arg Asp Val Leu Lys Glu	
	1665 1670 1675 1680	
5	atg aag gcg aag gcg tcc aca gtt aag gct aaa ctt cta tcc gtg gag	6889
	Met Lys Ala Lys Ala Ser Thr Val Lys Ala Lys Leu Leu Ser Val Glu	
	1685 1690 1695	
10	gaa gcc tgt aag ctg acg ccc cca cat tcg gcc aga tct aaa ttt ggc	6937
	Glu Ala Cys Lys Leu Thr Pro Pro His Ser Ala Arg Ser Lys Phe Gly	
	1700 1705 1710	
15	tat ggg gca aag gac gtc cgg aac cta tcc agc aag gcc gtt aac cac	6985
	Tyr Gly Ala Lys Asp Val Arg Asn Leu Ser Ser Lys Ala Val Asn His	
	1715 1720 1725	
20	atc cgc tcc gtg tgg aag gac ttg ctg gaa gac act gag aca cca att	7033
	Ile Arg Ser Val Trp Lys Asp Leu Leu Glu Asp Thr Glu Thr Pro Ile	
	1730 1735 1740	
25	gac acc acc atc atg gca aaa aat gag gtt ttc tgc gtc caa cca gag	7081
	Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln Pro Glu	
	1745 1750 1755 1760	
30	aag ggg ggc cgc aag cca gct cgc ctt atc gta ttc cca gat ttg ggg	7129
	Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp Leu Gly	
	1765 1770 1775	
35	gtt cgt gtg tgc gag aaa atg gcc ctt tac gat gtg gtc tcc acc ctc	7177
	Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Ser Thr Leu	
	1780 1785 1790	
40	cct cag gcc gtg atg ggc tct tca tac gga ttc caa tac tct cct gga	7225
	Pro Gln Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser Pro Gly	
	1795 1800 1805	
45	cag cgg gtc gag ttc ctg gtg aat gcc tgg aaa gcg aag aaa tgc cct	7273
	Gln Arg Val Glu Phe Leu Val Asn Ala Trp Lys Ala Lys Lys Cys Pro	
	1810 1815 1820	
50	atg ggc ttc gca tat gac acc cgc tgt ttt gac tca acg gtc act gag	7321
	Met Gly Phe Ala Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val Thr Glu	
	1825 1830 1835 1840	
55	aat gac atc cgt gtt gag gag tca atc tac caa tgt tgt gac ttg gcc	7369
	Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln Cys Cys Asp Leu Ala	
	1845 1850 1855	
60	ccc gaa gcc aga cag gcc ata agg tcg ctc aca gag cgg ctt tac atc	7417
	Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr Glu Arg Leu Tyr Ile	
	1860 1865 1870	
65	ggg ggc ccc ctg act aat tct aaa ggg cag aac tgc ggc tat cgc cgg	7465
	Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn Cys Gly Tyr Arg Arg	
	1875 1880 1885	

	tgc cgc gcg agc ggt gta ctg acg acc agc tgc ggt aat acc ctc aca	7513
	Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr Leu Thr	
	1890 1895 1900	
5	tgt tac ttg aag gcc gct gcg gcc tgt cga gct gcg aag ctc cag gac	7561
	Cys Tyr Leu Lys Ala Ala Ala Ala Cys Arg Ala Ala Lys Leu Gln Asp	
	1905 1910 1915 1920	
10	tgc acg atg ctc gta tgc gga gac gac ctt gtc gtt atc tgt gaa agc	7609
	Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys Glu Ser	
	1925 1930 1935	
15	gcg ggg acc caa gag gac gag gcg agc cta cgg gcc ttc acg gag gct	7657
	Ala Gly Thr Gln Glu Asp Glu Ala Ser Leu Arg Ala Phe Thr Glu Ala	
	1940 1945 1950	
20	atg act aga tac tct gcc ccc cct ggg gac ccg ccc aaa cca gaa tac	7705
	Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Lys Pro Glu Tyr	
	1955 1960 1965	
25	gat gca tct ggc aaa agg gtg tac tat ctc acc cgt gac ccc acc acc	7801
	Asp Ala Ser Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro Thr Thr	
	1985 1990 1995 2000	
30	ccc ctt gcg cgg gct gcg tgg gag aca gct aga cac act cca gtc aat	7849
	Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro Val Asn	
	2005 2010 2015	
35	tcc tgg cta ggc aac atc atc atg tat gcg ccc acc ttg tgg gca agg	7897
	Ser Trp Leu Gly Asn Ile Ile Met Tyr Ala Pro Thr Leu Trp Ala Arg	
	2020 2025 2030	
40	atg atc ctg atg act cat ttc ttc tcc atc ctt cta gct cag gaa caa	7945
	Met Ile Leu Met Thr His Phe Phe Ser Ile Leu Leu Ala Gln Glu Gln	
	2035 2040 2045	
45	ctt gaa aaa gcc cta gat tgt cag atc tac ggg gcc tgt tac tcc att	7993
	Leu Glu Lys Ala Leu Asp Cys Gln Ile Tyr Gly Ala Cys Tyr Ser Ile	
	2050 2055 2060	
50	gag cca ctt gac cta cct cag atc att caa cga ctc cac ggc ctt agc	8041
	Glu Pro Leu Asp Leu Pro Gln Ile Ile Gln Arg Leu His Gly Leu Ser	
	2065 2070 2075 2080	
55	gca ttt tca ctc cat agt tac tct cca ggt gag atc aat agg gtg gct	8089
	Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg Val Ala	
	2085 2090 2095	
60	tca tgc ctc agg aaa ctt ggg gta ccg ccc ttg cga gtc tgg aga cat	8137
	Ser Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Val Trp Arg His	
	2100 2105 2110	
65	cgg gcc aga agt gtc cgc gct agg cta ctg tcc cag ggg ggg agg gct	8185

```

Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ser Gln Gly Gly Arg Ala
2115                                2120                                2125

5 gcc act tgt ggc aag tac ctc ttc aac tgg gca gta agg acc aag ctc 8233
Ala Thr Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr Lys Leu
2130                                2135                                2140

10 aaa ctc act cca atc ccg gct gcg tcc cag ttg gat tta tcc agc tgg 8281
Lys Leu Thr Pro Ile Pro Ala Ala Ser Gln Leu Asp Leu Ser Ser Trp
2145                                2150                                2155                                2160

15 ttc gtt gct ggt tac agc ggg gga gac ata tat cac agc ctg tct cgt 8329
Phe Val Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Leu Ser Arg
2165                                2170                                2175

gcc cga ccc cgc tgg ttc atg tgg tgc cta ctc cta ctt tct gta ggg 8377
Ala Arg Pro Arg Trp Phe Met Trp Cys Leu Leu Leu Leu Ser Val Gly
2180                                2185                                2190

20 gta ggc atc tat cta ctc ccc aac cga tga acgaggagct aaacactcca 8427
Val Gly Ile Tyr Leu Leu Pro Asn Arg *
2195                                2200

25 ggccaatagg ccatacctggt tttttccctt tttttttttt tttttttttc tttttttttt 8487
tttttttttt tttttttttt tccttttttt tcctcttttt ttccttttct ttccttttgt 8547
ggctccatct tagccctagt cacggctagc tgtgaaaggt ccgtgagccg cttgactgca 8607
gagagtgtcg atactggcct ctctgcagat caagt 8642

<210> 3
30 <211> 8643
<212> DNA
<213> HCV

<220>
35 <221> CDS
<222> (1802)...(8407)

<400> 3
40 accagccccc gattgggggc gacactccac catagatcac tcccctgtga ggaactactg 60
tcttcacgca gaaagcgtct agccatggcg ttagtatgag tgcgtgcag cctccaggac 120
ccccctccc gggagagcca tagtggctct cggaaccggg gagtacaccg gaattgccag 180
gacgaccggg tcctttcttg gatcaaccgc ctcaatgcct ggagatttgg gcgtgcccc 240
gcgagactgc tagccgagta gtgttgggtc gcgaaaggcc ttgtggtact gcctgatagg 300
gtgcttgcca gtgccccggg aggtctcgta gaccgtgcac catgagcacg aatcctaaac 360
45 ctcaaagaaa aaccaaaggg cgcgccatga ttgaacaaga tggattgcac gcaggttctc 420
cggccgcttg ggtggagagg ctattcggct atgactgggc gcaacagaca atcggtgct 480
ctgatgccgc cgtgttcagg ctgtcagcgc aggggcgccc ggttcttttt gtcaagaccg 540
acctgtccgg tgccctgaat gaactgcagg acgaggcagc gcggctatcg tggctggcca 600
cgacggggcg tccttgcgca gctgtgctcg acgttgtcac tgaagcggga agggactggc 660
50 tgctattggg cgaagtgccg gggcaggatc tcctgtcatc tcaccttgct cctgccgaga 720
aagtatccat catggctgat gcaatgcggc ggctgcatac gcttgatccg gctacctgcc 780
cattcgacca ccaagcgaaa catcgcatcg agcgagcacg tactcggatg gaagccggtc 840
ttgtcgatca ggatgatctg gacgaagagc atcaggggct cgcgccagcc gaactgttcg 900
ccaggctcaa ggcgcgcatg cccgacggcg aggatctcgt cgtgacccat ggcgatgcct 960
55 gcttgccgaa tatcatggtg gaaaatggcc gcttttctgg attcatcgac tgtggccggc 1020
tggtgtgtgg ggaccgctat caggacatag cgttggctac ccgtgatatt gctgaagagc 1080
ttggcggcga atgggctgac cgcttcctcg tgctttacgg tatcgccgct ccgattcgc 1140

```

	agcgcacgcg	cttctatcgc	cttcttgacg	agttcttctg	agttcgcgcc	cagatgttaa	1200
	cagaccacaa	cggtttccct	ctagcgggat	caattccgcc	cccccccta	acgttactgg	1260
	ccgaagccgc	ttggaataag	gccggtgtgc	gtttgtctat	atgttatttt	ccaccatatt	1320
	gccgtctttt	ggcaatgtga	gggcccggaa	acctggccct	gtcttcttga	cgagcattcc	1380
5	taggggtctt	tcccctctcg	ccaaaggaat	gcaaggtctg	ttgaatgtcg	tgaaggaagc	1440
	agttcctctg	gaagcttctt	gaagacaaac	aacgtctgta	gcgacccttt	gcaggcagcg	1500
	gaacccccca	cctggcgaca	ggtgcctctg	cggccaaaag	ccacgtgtat	aagatacacc	1560
	tgcaaaggcg	gcacaacccc	agtgccacgt	tgtgagttgg	atagttgtgg	aaagagtcaa	1620
	atggctctcc	tcaagcgtat	tcaacaaggg	gctgaaggat	gcccagaagg	taccccattg	1680
10	tatgggatct	gatctggggc	ctcgggtgcac	atgctttaca	tgtgtttagt	cgagggttaga	1740
	aaacgtctag	gccccccgaa	ccacggggac	gtgggtttcc	tttgaaaaac	acgataatac	1800
	c atg gac	cgg gag atg	gca gca tgc	tgc gga ggc	gcg gtt ttc	gta ggt	1849
	Met Asp Arg	Glu Met Ala	Ala Ala Ser	Cys Gly Gly	Ala Val Phe	Val Gly	
	1	5	10	15			
15	ctg ata ctc	ttg acc ttg	tca ccg cac	tat aag ctg	ttc ctc gct	agg	1897
	Leu Ile Leu	Leu Thr Leu	Ser Pro His	Tyr Lys Leu	Phe Leu Ala	Arg	
		20	25		30		
20	ctc ata tgg	tgg tta caa	tat ttt atc	acc agg gcc	gag gca cac	ttg	1945
	Leu Ile Trp	Trp Leu Gln	Tyr Phe Ile	Thr Arg Ala	Glu Ala His	Leu	
		35	40		45		
25	caa gtg tgg	atc ccc ccc	ctc aac gtt	cgg ggg ggc	cgc gat gcc	gtc	1993
	Gln Val Trp	Ile Pro Pro	Leu Asn Val	Arg Gly Gly	Arg Asp Ala	Val	
		50	55		60		
30	atc ctc ctc	acg tgc gcg	atc cac cca	gag cta atc	ttt acc atc	acc	2041
	Ile Leu Leu	Thr Cys Ala	Ile His Pro	Glu Leu Ile	Phe Thr Ile	Thr	
		65	70		75	80	
	aaa atc ttg	ctc gcc ata	ctc ggt cca	ctc atg gtg	ctc cag gct	ggt	2089
	Lys Ile Leu	Leu Ala Ile	Leu Gly Pro	Leu Met Val	Leu Gln Ala	Gly	
		85	90		95		
35	ata acc aaa	gtg ccg tac	ttc gtg cgc	gca cac ggg	ctc att cgt	gca	2137
	Ile Thr Lys	Val Pro Tyr	Phe Val Arg	Ala His Gly	Leu Ile Arg	Ala	
		100	105		110		
40	tgc atg ctg	gtg ccg aag	gtt gct ggg	ggt cat tat	gtc caa atg	gct	2185
	Cys Met Leu	Val Arg Lys	Val Ala Gly	Gly His Tyr	Val Gln Met	Ala	
		115	120		125		
45	ctc atg aag	ttg gcc gca	ctg aca ggt	acg tac gtt	tat gac cat	ctc	2233
	Leu Met Lys	Leu Ala Ala	Leu Thr Gly	Thr Tyr Val	Tyr Asp His	Leu	
		130	135		140		
50	acc cca ctg	cgg gac tgg	gcc cac gcg	ggc cta cga	gac ctt gcg	gtg	2281
	Thr Pro Leu	Arg Asp Trp	Ala His Ala	Gly Leu Arg	Asp Leu Ala	Val	
		145	150		155	160	
	gca gtt gag	ccc gtc gtc	ttc tct gat	atg gag acc	aag gtt atc	acc	2329
	Ala Val Glu	Pro Val Val	Phe Ser Asp	Met Glu Thr	Lys Val Ile	Thr	
		165	170		175		
55	tgg ggg gca	gac acc gcg	gcg tgt ggg	gac atc atc	ttg ggc ctg	ccc	2377
	Trp Gly Ala	Asp Thr Ala	Ala Cys Gly	Asp Ile Ile	Leu Gly Leu	Pro	

	180	185	190	
5	gtc tcc gcc cgc agg ggg agg gag ata cat ctg gga ccg gca gac agc Val Ser Ala Arg Arg Gly Arg Glu Ile His Leu Gly Pro Ala Asp Ser 195 200 205	2425		
10	ctt gaa ggg cag ggg tgg cga ctc ctc gcg cct att acg gcc tac tcc Leu Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser 210 215 220	2473		
15	caa cag acg cga ggc cta ctt ggc tgc atc atc act agc ctc aca ggc Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly 225 230 235 240	2521		
20	cgg gac agg aac cag gtc gag ggg gag gtc caa gtg gtc tcc acc gca Arg Asp Arg Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala 245 250 255	2569		
25	aca caa tct ttc ctg gcg acc tgc gtc aat ggc gtg tgt tgg act gtc Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val 260 265 270	2617		
30	tat cat ggt gcc ggc tca aag acc ctt gcc ggc cca aag ggc cca atc Tyr His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile 275 280 285	2665		
35	acc caa atg tac acc aat gtg gac cag gac ctc gtc ggc tgg caa gcg Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala 290 295 300	2713		
40	ccc ccc ggg gcg cgt tcc ttg aca cca tgc acc tgc ggc agc tcg gac Pro Pro Gly Ala Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp 305 310 315 320	2761		
45	ctt tac ttg gtc acg aag cat gcc gat gtc att ccg gtg cgc cgg cgg Leu Tyr Leu Val Thr Lys His Ala Asp Val Ile Pro Val Arg Arg Arg 325 330 335	2809		
50	ggc gac agc agg ggg agc cta ctc tcc ccc cgg ccc gtc tcc tac ttg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu 340 345 350	2857		
55	aag ggc tct tcg ggc ggt cca ctg ctc tgc ccc tcg ggg cac gct gtg Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val 355 360 365	2905		
60	ggc atc ttt cgg gct gcc gtg tgc acc cga ggg gtt gcg aag gcg gtg Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val 370 375 380	2953		
65	gac ttt gta ccc gtc gag tct atg gaa acc act atg cgg tcc ccg gtc Asp Phe Val Pro Val Glu Ser Met Glu Thr Thr Met Arg Ser Pro Val 385 390 395 400	3001		
70	ttc acg gac aac tcg tcc cct ccg gcc gta ccg cag aca ttc cag gtg Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro Gln Thr Phe Gln Val 405 410 415	3049		

	gcc cat cta cac gcc cct act ggt agc ggc aag agc act aag gtg ccg	3097
	Ala His Leu His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val Pro	
	420 425 430	
5		
	gct gcg tat gca gcc caa ggg tat aag gtg ctt gtc ctg aac ccg tcc	3145
	Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro Ser	
	435 440 445	
10		
	gtc gcc gcc acc cta ggt ttc ggg gcg tat atg tct aag gca cat ggt	3193
	Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His Gly	
	450 455 460	
15		
	atc gac cct aac atc aga acc ggg gta agg acc atc acc acg ggt gcc	3241
	Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly Ala	
	465 470 475 480	
20		
	ccc atc acg tac tcc acc tat ggc aag ttt ctt gcc gac ggt ggt tgc	3289
	Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys	
	485 490 495	
25		
	tct ggg ggc gcc tat gac atc ata ata tgt gat gag tgc cac tca act	3337
	Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser Thr	
	500 505 510	
30		
	gac tcg acc act atc ctg ggc atc ggc aca gtc ctg gac caa gcg gag	3385
	Asp Ser Thr Thr Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala Glu	
	515 520 525	
35		
	acg gct gga gcg cga ctc gtc gtg ctc gcc acc gct acg cct ccg gga	3433
	Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro Gly	
	530 535 540	
40		
	tcg gtc acc gtg cca cat cca aac atc gag gag gtg gct ctg tcc agc	3481
	Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser Ser	
	545 550 555 560	
45		
	act gga gaa atc ccc ttt tat ggc aaa gcc atc ccc atc gag acc atc	3529
	Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Ile Glu Thr Ile	
	565 570 575	
50		
	aag ggg ggg agg cac ctc att ttc tgc cat tcc aag aag aaa tgt gat	3577
	Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys Asp	
	580 585 590	
55		
	gag ctc gcc gcg aag ctg tcc ggc ctc gga ctc aat gct gta gca tat	3625
	Glu Leu Ala Ala Lys Leu Ser Gly Leu Gly Leu Asn Ala Val Ala Tyr	
	595 600 605	
60		
	tac cgg ggc ctt gat gta tcc gtc ata cca act agc gga gac gtc att	3673
	Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val Ile	
	610 615 620	
65		
	gtc gta gca acg gac gct cta atg acg ggc ttt acc ggc gat ttc gac	3721
	Val Val Ala Thr Asp Ala Leu Met Thr Gly Phe Thr Gly Asp Phe Asp	
	625 630 635 640	

	tca gtc atc gac tgc aat aca tgt gtc acc cag aca gtc gac ttc agc	3769
	Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser	
	645 650 655	
5	ctg gac ccg acc ttc acc att gag acg acg acc gtc cca caa gac gcg	3817
	Leu Asp Pro Thr Phe Thr Ile Glu Thr Thr Val Pro Gln Asp Ala	
	660 665 670	
10	gtg tca cgc tcg cag cgg cga ggc agg act ggt agg ggc agg atg ggc	3865
	Val Ser Arg Ser Gln Arg Arg Gly Arg Thr Gly Arg Gly Arg Met Gly	
	675 680 685	
15	att tac agg ttt gtg act cca gga gaa cgg ccc tcg ggc atg ttc gat	3913
	Ile Tyr Arg Phe Val Thr Pro Gly Glu Arg Pro Ser Gly Met Phe Asp	
	690 695 700	
20	tcc tcg gtt ctg tgc gag tgc tat gac gcg ggc tgt gct tgg tac gag	3961
	Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu	
	705 710 715 720	
	ctc acg ccc gcc gag acc tca gtt agg ttg cgg gct tac cta aac aca	4009
	Leu Thr Pro Ala Glu Thr Ser Val Arg Leu Arg Ala Tyr Leu Asn Thr	
	725 730 735	
25	cca ggg ttg ccc gtc tgc cag gac cat ctg gag ttc tgg gag ggc gtc	4057
	Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly Val	
	740 745 750	
30	ttt aca ggc ctc acc cac ata gac gcc cat ttc ttg tcc cag act aag	4105
	Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys	
	755 760 765	
35	cag gca gga gac aac ttc ccc tac ctg gta gca tac cag gct acg gtg	4153
	Gln Ala Gly Asp Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val	
	770 775 780	
40	tgc gcc agg gct cag gct cca cct cca tcg tgg gac caa atg tgg aag	4201
	Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp Lys	
	785 790 795 800	
	tgt ctc ata cgg cta aag cct acg ctg cac ggg cca acg ccc ctg ctg	4249
	Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu	
	805 810 815	
45	tat agg ctg gga gcc gtt caa aac gag gtt act acc aca cac ccc ata	4297
	Tyr Arg Leu Gly Ala Val Gln Asn Glu Val Thr Thr Thr His Pro Ile	
	820 825 830	
50	acc aaa tac atc atg gca tgc atg tcg gct gac ctg gag gtc gtc acg	4345
	Thr Lys Tyr Ile Met Ala Cys Met Ser Ala Asp Leu Glu Val Val Thr	
	835 840 845	
55	agc acc tgg gtg ctg gta ggc gga gtc cta gca gct ctg gcc gcg tat	4393
	Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr	
	850 855 860	
	tgc ctg aca aca ggc agc gtg gtc att gtg ggc agg atc atc ttg tcc	4441

	Cys	Leu	Thr	Thr	Gly	Ser	Val	Val	Ile	Val	Gly	Arg	Ile	Ile	Leu	Ser	
	865					870					875					880	
5	gga	agg	ccg	gcc	atc	att	ccc	gac	agg	gaa	gtc	ctt	tac	cgg	gag	ttc	4489
	Gly	Arg	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu	Val	Leu	Tyr	Arg	Glu	Phe	
					885					890					895		
10	gat	gag	atg	gaa	gag	tgc	gcc	tca	cac	ctc	cct	tac	atc	gaa	cag	gga	4537
	Asp	Glu	Met	Glu	Glu	Cys	Ala	Ser	His	Leu	Pro	Tyr	Ile	Glu	Gln	Gly	
				900					905					910			
15	atg	cag	ctc	gcc	gaa	caa	ttc	aaa	cag	aag	gca	atc	ggg	ttg	ctg	caa	4585
	Met	Gln	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Ile	Gly	Leu	Leu	Gln	
			915					920					925				
20	aca	gcc	acc	aag	caa	gcg	gag	gct	gct	gct	ccc	gtg	gtg	gaa	tcc	aag	4633
	Thr	Ala	Thr	Lys	Gln	Ala	Glu	Ala	Ala	Ala	Pro	Val	Val	Glu	Ser	Lys	
		930				935					940						
25	tgg	cgg	acc	ctc	gaa	gcc	ttc	tgg	gcg	aag	cat	atg	tgg	aat	ttc	atc	4681
	Trp	Arg	Thr	Leu	Glu	Ala	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe	Ile	
	945				950					955						960	
30	agc	ggg	ata	caa	tat	tta	gca	ggc	ttg	tcc	act	ctg	cct	ggc	aac	ccc	4729
	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro	Gly	Asn	Pro	
				965					970					975			
35	gcg	ata	gca	tca	ctg	atg	gca	ttc	aca	gcc	tct	atc	acc	agc	ccg	ctc	4777
	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	Ser	Ile	Thr	Ser	Pro	Leu	
				980				985						990			
40	acc	acc	caa	cat	acc	ctc	ctg	ttt	aac	atc	ctg	ggg	gga	tgg	gtg	gcc	4825
	Thr	Thr	Gln	His	Thr	Leu	Leu	Phe	Asn	Ile	Leu	Gly	Gly	Trp	Val	Ala	
			995					1000					1005				
45	gcc	caa	ctt	gct	cct	ccc	agc	gct	gct	tcc	gct	ttc	gta	ggc	gcc	ggc	4873
	Ala	Gln	Leu	Ala	Pro	Pro	Ser	Ala	Ala	Ser	Ala	Phe	Val	Gly	Ala	Gly	
		1010				1015						1020					
50	atc	gct	gga	gcg	gct	gtt	ggc	agc	ata	ggc	ctt	ggg	aag	gtg	ctt	gtg	4921
	Ile	Ala	Gly	Ala	Ala	Val	Gly	Ser	Ile	Gly	Leu	Gly	Lys	Val	Leu	Val	
	1025					1030					1035					1040	
55	gat	att	ttg	gca	ggt	tat	gga	gca	ggg	gtg	gca	ggc	gcg	ctc	gtg	gcc	4969
	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	Ala	Gly	Ala	Leu	Val	Ala	
				1045					1050					1055			
60	ttt	aag	gtc	atg	agc	ggc	gag	atg	ccc	tcc	acc	gag	gac	ctg	gtt	aac	5017
	Phe	Lys	Val	Met	Ser	Gly	Glu	Met	Pro	Ser	Thr	Glu	Asp	Leu	Val	Asn	
				1060				1065						1070			
65	cta	ctc	cct	gct	atc	ctc	tcc	cct	ggc	gcc	cta	gtc	gtc	ggg	gtc	gtg	5065
	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val	Val	
			1075				1080						1085				
70	tgc	gca	gcg	ata	ctg	cgt	cgg	cac	gtg	ggc	cca	ggg	gag	ggg	gct	gtg	5113
	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly	Pro	Gly	Glu	Gly	Ala	Val	

	1090	1095	1100	
5	cag tgg atg aac cgg ctg ata gcg ttc gct tcg cgg ggt aac cac gtc Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His Val 1105 1110 1115 1120			5161
10	tcc ccc acg cac tat gtg cct gag agc gac gct gca gca cgt gtc act Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val Thr 1125 1130 1135			5209
15	cag atc ctc tct agt ctt acc atc act cag ctg ctg aag agg ctt cac Gln Ile Leu Ser Ser Leu Thr Ile Thr Gln Leu Leu Lys Arg Leu His 1140 1145 1150			5257
20	cag tgg atc aac gag gac tgc tcc acg cca tgc tcc ggc tcg tgg cta Gln Trp Ile Asn Glu Asp Cys Ser Thr Pro Cys Ser Gly Ser Trp Leu 1155 1160 1165			5305
25	aga gat gtt tgg gat tgg ata tgc acg gtg ttg act gat ttc aag gcc Arg Asp Val Trp Asp Trp Ile Cys Thr Val Leu Thr Asp Phe Lys Ala 1170 1175 1180			5353
30	tgg ctc cag tcc aag ctc ctg ccg cga ttg ccg gga gtc ccc ttc ttc Trp Leu Gln Ser Lys Leu Leu Pro Arg Leu Pro Gly Val Pro Phe Phe 1185 1190 1195 1200			5401
35	tca tgt caa cgt ggg tac aag gga gtc tgg cgg ggc gac ggc atc atg Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile Met 1205 1210 1215			5449
40	caa acc acc tgc cca tgt gga gca cag atc acc gga cat gtg aaa aac Gln Thr Thr Cys Pro Cys Gly Ala Gln Ile Thr Gly His Val Lys Asn 1220 1225 1230			5497
45	tgt tcc atg agg atc gtg ggg cct agg acc tgt agt aac acg tgg cat Cys Ser Met Arg Ile Val Gly Pro Arg Thr Cys Ser Asn Thr Trp His 1235 1240 1245			5545
50	gga aca ttc ccc att aac gcg tac acc acg ggc ccc tgc acg ccc tcc Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro Ser 1250 1255 1260			5593
55	ccg gcg cca aat tat tct agg gcg ctg tgg cgg gtg gct gct gag gag Pro Ala Pro Asn Tyr Ser Arg Ala Leu Trp Arg Val Ala Ala Glu Glu 1265 1270 1275 1280			5641
60	tac gtg gag gtt acg cga gtg ggg gat ttc cac tac gtg acg ggc atg Tyr Val Glu Val Thr Arg Val Gly Asp Phe His Tyr Val Thr Gly Met 1285 1290 1295			5689
65	acc act gac aac gta aag tgc ccg tgt cag gtt ccg gcc ccc gaa ttc Thr Thr Asp Asn Val Lys Cys Pro Cys Gln Val Pro Ala Pro Glu Phe 1300 1305 1310			5737
70	ttc aca gaa gtg gat ggg gtg cgg ttg cac agg tac gct cca gcg tgc Phe Thr Glu Val Asp Gly Val Arg Leu His Arg Tyr Ala Pro Ala Cys 1315 1320 1325			5785

	aaa ccc ctc cta cgg gag gag gtc aca ttc ctg gtc ggg ctc aat caa	5833
	Lys Pro Leu Leu Arg Glu Glu Val Thr Phe Leu Val Gly Leu Asn Gln	
	1330 1335 1340	
5	tac ctg gtt ggg tca cag ctc cca tgc gag ccc gaa ctg gac gta gca	5881
	Tyr Leu Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Leu Asp Val Ala	
	1345 1350 1355 1360	
10	gtg ctc act tcc atg ctc acc gac ccc tcc cac att acg gcg gag acg	5929
	Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu Thr	
	1365 1370 1375	
15	gct aag cgt agg ctg gcc agg gga tct ccc ccc tcc ttg gcc agc tca	5977
	Ala Lys Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Leu Ala Ser Ser	
	1380 1385 1390	
20	tca gct agc cag ctg tct gcg cct tcc ttg aag gca aca tgc act acc	6025
	Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr Thr	
	1395 1400 1405	
	cgt cat gac tcc ccg gac gct gac ctc atc gag gcc aac ctc ctg tgg	6073
	Arg His Asp Ser Pro Asp Ala Asp Leu Ile Glu Ala Asn Leu Leu Trp	
	1410 1415 1420	
25	cgg cag gag atg ggc ggg aac atc acc cgc gtg gag tca gaa aat aag	6121
	Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn Lys	
	1425 1430 1435 1440	
30	gta gta att ttg gac tct ttc gag ccg ctc caa gcg gag gag gat gag	6169
	Val Val Ile Leu Asp Ser Phe Glu Pro Leu Gln Ala Glu Glu Asp Glu	
	1445 1450 1455	
35	agg gaa gta tcc gtt ccg gcg gag atc ctg ccg agg tcc agg aaa ttc	6217
	Arg Glu Val Ser Val Pro Ala Glu Ile Leu Arg Arg Ser Arg Lys Phe	
	1460 1465 1470	
40	cct cga gcg atg ccc ata tgg gca cgc ccg gat tac aac cct cca ctg	6265
	Pro Arg Ala Met Pro Ile Trp Ala Arg Pro Asp Tyr Asn Pro Pro Leu	
	1475 1480 1485	
	ttg gag tcc tgg aag gac ccg gac tac gtc cct cca gtg gta cac ggg	6313
	Leu Glu Ser Trp Lys Asp Pro Asp Tyr Val Pro Pro Val Val His Gly	
	1490 1495 1500	
45	tgt cca ttg ccg cct gcc aag gcc cct ccg ata cca cct cca cgg agg	6361
	Cys Pro Leu Pro Pro Ala Lys Ala Pro Pro Ile Pro Pro Pro Arg Arg	
	1505 1510 1515 1520	
50	aag agg acg gtt gtc ctg tca gaa tct acc gtg tct tct gcc ttg gcg	6409
	Lys Arg Thr Val Val Leu Ser Glu Ser Thr Val Ser Ser Ala Leu Ala	
	1525 1530 1535	
55	gag ctc gcc aca aag acc ttc ggc agc tcc gaa tcg tcg gcc gtc gac	6457
	Glu Leu Ala Thr Lys Thr Phe Gly Ser Ser Glu Ser Ser Ala Val Asp	
	1540 1545 1550	

	agc ggc acg gca acg gcc tct cct gac cag ccc tcc gac gac ggc gac	6505
	Ser Gly Thr Ala Thr Ala Ser Pro Asp Gln Pro Ser Asp Asp Gly Asp	
	1555 1560 1565	
5	gcg gga tcc gac gtt gag tcg tac tcc tcc atg ccc ccc ctt gag ggg	6553
	Ala Gly Ser Asp Val Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu Gly	
	1570 1575 1580	
10	gag ccg ggg gat ccc gat ctc agc gac ggg tct tgg tct acc gta agc	6601
	Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val Ser	
	1585 1590 1595 1600	
15	gag gag gct agt gag gac gtc gtc tgc tgc tcg atg tcc tac aca tgg	6649
	Glu Glu Ala Ser Glu Asp Val Val Cys Cys Ser Met Ser Tyr Thr Trp	
	1605 1610 1615	
20	acg ggc gcc ctg atc acg cca tgc gct gcg gag gaa acc aag ctg ccc	6697
	Thr Gly Ala Leu Ile Thr Pro Cys Ala Ala Glu Glu Thr Lys Leu Pro	
	1620 1625 1630	
	atc aat gca ctg agc aac tct ttg ctc cgt cac cac aac ttg gtc tat	6745
	Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu Val Tyr	
	1635 1640 1645	
25	gct aca aca tct cgc agc gca agc ctg cgg cag aag aag gtc acc ttt	6793
	Ala Thr Thr Ser Arg Ser Ala Ser Leu Arg Gln Lys Lys Val Thr Phe	
	1650 1655 1660	
30	gac aga ctg cag gtc ctg gac gac cac tac cgg gac gtg ctc aag gag	6841
	Asp Arg Leu Gln Val Leu Asp Asp His Tyr Arg Asp Val Leu Lys Glu	
	1665 1670 1675 1680	
35	atg aag gcg aag gcg tcc aca gtt aag gct aaa ctt cta tcc gtg gag	6889
	Met Lys Ala Lys Ala Ser Thr Val Lys Ala Lys Leu Leu Ser Val Glu	
	1685 1690 1695	
40	gaa gcc tgt aag ctg acg ccc cca cat tcg gcc aga tct aaa ttt ggc	6937
	Glu Ala Cys Lys Leu Thr Pro Pro His Ser Ala Arg Ser Lys Phe Gly	
	1700 1705 1710	
	tat ggg gca aag gac gtc cgg aac cta tcc agc aag gcc gtt aac cac	6985
	Tyr Gly Ala Lys Asp Val Arg Asn Leu Ser Ser Lys Ala Val Asn His	
	1715 1720 1725	
45	atc cgc tcc gtg tgg aag gac ttg ctg gaa gac act gag aca cca att	7033
	Ile Arg Ser Val Trp Lys Asp Leu Leu Glu Asp Thr Glu Thr Pro Ile	
	1730 1735 1740	
50	gac acc acc atc atg gca aaa aat gag gtt ttc tgc gtc caa cca gag	7081
	Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln Pro Glu	
	1745 1750 1755 1760	
55	aag ggg ggc cgc aag cca gct cgc ctt atc gta ttc cca gat ttg ggg	7129
	Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp Leu Gly	
	1765 1770 1775	
	gtt cgt gtg tgc gag aaa atg gcc ctt tac gat gtg gtc tcc acc ctc	7177

	Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Ser Thr Leu	
	1780 1785 1790	
5	cct cag gcc gtg atg ggc tct tca tac gga ttc caa tac tct cct gga Pro Gln Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser Pro Gly	7225
	1795 1800 1805	
10	cag cgg gtc gag ttc ctg gtg aat gcc tgg aaa gcg aag aaa tgc cct Gln Arg Val Glu Phe Leu Val Asn Ala Trp Lys Ala Lys Lys Cys Pro	7273
	1810 1815 1820	
15	atg ggc ttc gca tat gac acc cgc tgt ttt gac tca acg gtc act gag Met Gly Phe Ala Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val Thr Glu	7321
	1825 1830 1835 1840	
	aat gac atc cgt gtt gag gag tca atc tac caa tgt tgt gac ttg gcc Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln Cys Cys Asp Leu Ala	7369
	1845 1850 1855	
20	ccc gaa gcc aga cag gcc ata agg tcg ctc aca gag cgg ctt tac atc Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr Glu Arg Leu Tyr Ile	7417
	1860 1865 1870	
25	ggg ggc ccc ctg act aat tct aaa ggg cag aac tgc ggc tat cgc cgg Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn Cys Gly Tyr Arg Arg	7465
	1875 1880 1885	
30	tgc cgc gcg agc ggt gta ctg acg acc agc tgc ggt aat acc ctc aca Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr Leu Thr	7513
	1890 1895 1900	
35	tgt tac ttg aag gcc gct gcg gcc tgt cga gct gcg aag ctc cag gac Cys Tyr Leu Lys Ala Ala Ala Cys Arg Ala Ala Lys Leu Gln Asp	7561
	1905 1910 1915 1920	
	tgc acg atg ctc gta tgc gga gac gac ctt gtc gtt atc tgt gaa agc Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys Glu Ser	7609
	1925 1930 1935	
40	gcg ggg acc caa gag gac gag gcg agc cta cgg gcc ttc acg gag gct Ala Gly Thr Gln Glu Asp Glu Ala Ser Leu Arg Ala Phe Thr Glu Ala	7657
	1940 1945 1950	
45	atg act aga tac tct gcc ccc cct ggg gac ccg ccc aaa cca gaa tac Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Lys Pro Glu Tyr	7705
	1955 1960 1965	
50	gac ttg gag ttg ata aca tca tgc tcc tcc aat gtg tca gtc gcg cac Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val Ala His	7753
	1970 1975 1980	
55	gat gca tct ggc aaa agg gtg tac tat ctc acc cgt gac ccc acc acc Asp Ala Ser Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro Thr Thr	7801
	1985 1990 1995 2000	
	ccc ctt gcg cgg gct gcg tgg gag aca gct aga cac act cca gtc aat Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro Val Asn	7849

	2005	2010	2015	
5	tcc tgg cta ggc aac atc atc atg tat gcg ccc acc ttg tgg gca agg Ser Trp Leu Gly Asn Ile Ile Met Tyr Ala Pro Thr Leu Trp Ala Arg 2020 2025 2030	7897		
10	atg atc ctg atg act cat ttc ttc tcc atc ctt cta gct cag gaa caa Met Ile Leu Met Thr His Phe Phe Ser Ile Leu Leu Ala Gln Glu Gln 2035 2040 2045	7945		
15	ctt gaa aaa gcc cta gat tgt cag atc tac ggg gcc tgt tac tcc att Leu Glu Lys Ala Leu Asp Cys Gln Ile Tyr Gly Ala Cys Tyr Ser Ile 2050 2055 2060	7993		
20	gag cca ctt gac cta cct cag atc att caa cga ctc cac ggc ctt agc Glu Pro Leu Asp Leu Pro Gln Ile Ile Gln Arg Leu His Gly Leu Ser 2065 2070 2075 2080	8041		
25	gca ttt tca ctc cat agt tac tct cca ggt gag atc aat agg gtg gct Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg Val Ala 2085 2090 2095	8089		
30	tca tgc ctc agg aaa ctt ggg gta ccg ccc ttg cga gtc tgg aga cat Ser Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Val Trp Arg His 2100 2105 2110	8137		
35	cgg gcc aga agt gtc cgc gct agg cta ctg tcc cag ggg ggg agg gct Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ser Gln Gly Gly Arg Ala 2115 2120 2125	8185		
40	gcc act tgt ggc aag tac ctc ttc aac tgg gca gta agg acc aag ctc Ala Thr Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr Lys Leu 2130 2135 2140	8233		
45	aaa ctc act cca atc ccg gct gcg tcc cag ttg gat tta tcc agc tgg Lys Leu Thr Pro Ile Pro Ala Ala Ser Gln Leu Asp Leu Ser Ser Trp 2145 2150 2155 2160	8281		
50	ttc gtt gct ggt tac agc ggg gga gac ata tat cac agc ctg tct cgt Phe Val Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Leu Ser Arg 2165 2170 2175	8329		
55	gcc cga ccc cgc tgg ttc atg tgg tgc cta ctc cta ctt tct gta ggg Ala Arg Pro Arg Trp Phe Met Trp Cys Leu Leu Leu Leu Ser Val Gly 2180 2185 2190	8377		
	gta ggc atc tat cta ctc ccc aac cga tga acgaggagct aaacactcca Val Gly Ile Tyr Leu Leu Pro Asn Arg * 2195 2200	8427		
	ggccaatagg ccatactgtt ttttcccttt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt ttttcttttt tcccaatttt tttccttttc tttccttttg tggctccatc ttagccctag tcacggctag ctgtgaaagg tccgtgagcc gcttgactgc agagagtgc gatactggcc tctctgcaga tcaagt	8487 8547 8607 8643		
	<210> 4 <211> 2201			

<212> PRT
<213> HCV

<220>

5 <221> VARIANT
<222> 882
<223> Xaa is Lys or Arg

<221> VARIANT

10 <222> 1489
<223> Xaa is Leu

<400> 4

15	Met	Asp	Arg	Glu	Met	Ala	Ala	Ser	Cys	Gly	Gly	Ala	Val	Phe	Val	Gly
	1				5					10					15	
	Leu	Ile	Leu	Leu	Thr	Leu	Ser	Pro	His	Tyr	Lys	Leu	Phe	Leu	Ala	Arg
				20					25					30		
	Leu	Ile	Trp	Trp	Leu	Gln	Tyr	Phe	Ile	Thr	Arg	Ala	Glu	Ala	His	Leu
			35					40					45			
20	Gln	Val	Trp	Ile	Pro	Pro	Leu	Asn	Val	Arg	Gly	Gly	Arg	Asp	Ala	Val
		50					55					60				
	Ile	Leu	Leu	Thr	Cys	Ala	Ile	His	Pro	Glu	Leu	Ile	Phe	Thr	Ile	Thr
	65				70					75					80	
	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Gly	Pro	Leu	Met	Val	Leu	Gln	Ala	Gly
25					85					90				95		
	Ile	Thr	Lys	Val	Pro	Tyr	Phe	Val	Arg	Ala	His	Gly	Leu	Ile	Arg	Ala
				100					105					110		
	Cys	Met	Leu	Val	Arg	Lys	Val	Ala	Gly	Gly	His	Tyr	Val	Gln	Met	Ala
			115					120					125			
30	Leu	Met	Lys	Leu	Ala	Ala	Leu	Thr	Gly	Thr	Tyr	Val	Tyr	Asp	His	Leu
		130					135					140				
	Thr	Pro	Leu	Arg	Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	Asp	Leu	Ala	Val
	145					150					155					160
	Ala	Val	Glu	Pro	Val	Val	Phe	Ser	Asp	Met	Glu	Thr	Lys	Val	Ile	Thr
35					165					170					175	
	Trp	Gly	Ala	Asp	Thr	Ala	Ala	Cys	Gly	Asp	Ile	Ile	Leu	Gly	Leu	Pro
				180					185					190		
	Val	Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	His	Leu	Gly	Pro	Ala	Asp	Ser
			195					200					205			
40	Leu	Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr	Ala	Tyr	Ser
		210					215					220				
	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly
	225					230					235					240
	Arg	Asp	Arg	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser	Thr	Ala
45					245					250					255	
	Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp	Thr	Val
				260					265					270		
	Tyr	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly	Pro	Ile
			275					280					285			
50	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp	Gln	Ala
		290				295						300				
	Pro	Pro	Gly	Ala	Arg	Ser	Leu	Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp
	305					310					315					320
	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg	Arg	Arg
55					325					330					335	
	Gly	Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser	Tyr	Leu
				340					345					350		

	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His	Ala	Val
			355					360					365			
	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys	Ala	Val
		370					375					380				
5	Asp	Phe	Val	Pro	Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg	Ser	Pro	Val
	385					390					395					400
	Phe	Thr	Asp	Asn	Ser	Ser	Pro	Pro	Ala	Val	Pro	Gln	Thr	Phe	Gln	Val
				405						410					415	
10	Ala	His	Leu	His	Ala	Pro	Thr	Gly	Ser	Gly	Lys	Ser	Thr	Lys	Val	Pro
				420					425					430		
	Ala	Ala	Tyr	Ala	Ala	Gln	Gly	Tyr	Lys	Val	Leu	Val	Leu	Asn	Pro	Ser
			435					440					445			
	Val	Ala	Ala	Thr	Leu	Gly	Phe	Gly	Ala	Tyr	Met	Ser	Lys	Ala	His	Gly
		450					455					460				
15	Ile	Asp	Pro	Asn	Ile	Arg	Thr	Gly	Val	Arg	Thr	Ile	Thr	Thr	Gly	Ala
	465					470					475					480
	Pro	Ile	Thr	Tyr	Ser	Thr	Tyr	Gly	Lys	Phe	Leu	Ala	Asp	Gly	Gly	Cys
				485						490					495	
20	Ser	Gly	Gly	Ala	Tyr	Asp	Ile	Ile	Ile	Cys	Asp	Glu	Cys	His	Ser	Thr
				500					505					510		
	Asp	Ser	Thr	Thr	Ile	Leu	Gly	Ile	Gly	Thr	Val	Leu	Asp	Gln	Ala	Glu
			515					520					525			
	Thr	Ala	Gly	Ala	Arg	Leu	Val	Val	Leu	Ala	Thr	Ala	Thr	Pro	Pro	Gly
		530					535					540				
25	Ser	Val	Thr	Val	Pro	His	Pro	Asn	Ile	Glu	Glu	Val	Ala	Leu	Ser	Ser
	545					550					555					560
	Thr	Gly	Glu	Ile	Pro	Phe	Tyr	Gly	Lys	Ala	Ile	Pro	Ile	Glu	Thr	Ile
				565						570					575	
30	Lys	Gly	Gly	Arg	His	Leu	Ile	Phe	Cys	His	Ser	Lys	Lys	Lys	Cys	Asp
				580					585					590		
	Glu	Leu	Ala	Ala	Lys	Leu	Ser	Gly	Leu	Gly	Leu	Asn	Ala	Val	Ala	Tyr
			595					600					605			
	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	Ile	Pro	Thr	Ser	Gly	Asp	Val	Ile
		610					615					620				
35	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr	Gly	Phe	Thr	Gly	Asp	Phe	Asp
	625					630					635					640
	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr	Gln	Thr	Val	Asp	Phe	Ser
				645						650					655	
40	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Thr	Thr	Val	Pro	Gln	Asp	Ala
				660					665					670		
	Val	Ser	Arg	Ser	Gln	Arg	Arg	Gly	Arg	Thr	Gly	Arg	Gly	Arg	Met	Gly
			675					680					685			
	Ile	Tyr	Arg	Phe	Val	Thr	Pro	Gly	Glu	Arg	Pro	Ser	Gly	Met	Phe	Asp
		690					695					700				
45	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	Gly	Cys	Ala	Trp	Tyr	Glu
	705					710					715					720
	Leu	Thr	Pro	Ala	Glu	Thr	Ser	Val	Arg	Leu	Arg	Ala	Tyr	Leu	Asn	Thr
				725						730					735	
50	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	Glu	Phe	Trp	Glu	Ser	Val
				740					745					750		
	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His	Phe	Leu	Ser	Gln	Thr	Lys
			755					760					765			
	Gln	Ala	Gly	Asp	Asn	Phe	Pro	Tyr	Leu	Val	Ala	Tyr	Gln	Ala	Thr	Val
		770					775					780				
55	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp	Lys
	785					790					795					800
	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	Gly	Pro	Thr	Pro	Leu	Leu

					805					810					815	
	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Val	Thr	Thr	Thr	His	Pro	Ile
				820					825					830		
5	Thr	Lys	Tyr	Ile	Met	Ala	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val	Thr
			835					840					845			
	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	Ala	Ala	Leu	Ala	Ala	Tyr
		850					855				860					
	Cys	Leu	Thr	Thr	Gly	Ser	Val	Val	Ile	Val	Gly	Arg	Ile	Ile	Leu	Ser
	865					870					875					880
10	Gly	Xaa	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu	Val	Leu	Tyr	Arg	Glu	Phe
				885						890					895	
	Asp	Glu	Met	Glu	Glu	Cys	Ala	Ser	His	Leu	Pro	Tyr	Ile	Glu	Gln	Gly
				900					905					910		
15	Met	Gln	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Ile	Gly	Leu	Leu	Gln
			915					920					925			
	Thr	Ala	Thr	Lys	Gln	Ala	Glu	Ala	Ala	Ala	Pro	Val	Val	Glu	Ser	Lys
		930					935					940				
	Trp	Arg	Thr	Leu	Glu	Ala	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe	Ile
	945				950						955					960
20	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro	Gly	Asn	Pro
				965						970					975	
	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	Ser	Ile	Thr	Ser	Pro	Leu
				980					985					990		
25	Thr	Thr	Gln	His	Thr	Leu	Leu	Phe	Asn	Ile	Leu	Gly	Gly	Trp	Val	Ala
			995					1000					1005			
	Ala	Gln	Leu	Ala	Pro	Pro	Ser	Ala	Ala	Ser	Ala	Phe	Val	Gly	Ala	Gly
		1010					1015					1020				
	Ile	Ala	Gly	Ala	Ala	Val	Gly	Ser	Ile	Gly	Leu	Gly	Lys	Val	Leu	Val
	1025					1030					1035					1040
30	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	Ala	Gly	Ala	Leu	Val	Ala
				1045						1050					1055	
	Phe	Lys	Val	Met	Ser	Gly	Glu	Met	Pro	Ser	Thr	Glu	Asp	Leu	Val	Asn
			1060						1065					1070		
35	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val	Val
			1075					1080					1085			
	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly	Pro	Gly	Glu	Gly	Ala	Val
		1090					1095					1100				
	Gln	Trp	Met	Asn	Arg	Leu	Ile	Ala	Phe	Ala	Ser	Arg	Gly	Asn	His	Val
	1105				1110						1115					1120
40	Ser	Pro	Thr	His	Tyr	Val	Pro	Glu	Ser	Asp	Ala	Ala	Ala	Arg	Val	Thr
				1125						1130					1135	
	Gln	Ile	Leu	Ser	Ser	Leu	Thr	Ile	Thr	Gln	Leu	Leu	Lys	Arg	Leu	His
			1140						1145					1150		
45	Gln	Trp	Ile	Asn	Glu	Asp	Cys	Ser	Thr	Pro	Cys	Ser	Gly	Ser	Trp	Leu
		1155					1160						1165			
	Arg	Asp	Val	Trp	Asp	Trp	Ile	Cys	Thr	Val	Leu	Thr	Asp	Phe	Lys	Thr
		1170					1175						1180			
	Trp	Leu	Gln	Ser	Lys	Leu	Leu	Pro	Arg	Leu	Pro	Gly	Val	Pro	Phe	Phe
	1185				1190						1195					1200
50	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp	Arg	Gly	Asp	Gly	Ile	Met
				1205						1210					1215	
	Gln	Thr	Thr	Cys	Pro	Cys	Gly	Ala	Gln	Ile	Thr	Gly	His	Val	Lys	Asn
			1220					1225					1230			
	Cys	Ser	Met	Arg	Ile	Val	Gly	Pro	Arg	Thr	Cys	Ser	Asn	Thr	Trp	His
55			1235					1240					1245			
	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	Thr	Thr	Gly	Pro	Cys	Thr	Pro	Ser
		1250					1255					1260				

	Pro	Ala	Pro	Asn	Tyr	Ser	Arg	Ala	Leu	Trp	Arg	Val	Ala	Ala	Glu	Glu	1265	1270	1275	1280
	Tyr	Val	Glu	Val	Thr	Arg	Val	Gly	Asp	Phe	His	Tyr	Val	Thr	Gly	Met	1285	1290	1295	
5	Thr	Thr	Asp	Asn	Val	Lys	Cys	Pro	Cys	Gln	Val	Pro	Ala	Pro	Glu	Phe	1300	1305	1310	
	Phe	Thr	Glu	Val	Asp	Gly	Val	Arg	Leu	His	Arg	Tyr	Ala	Pro	Ala	Cys	1315	1320	1325	
10	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Thr	Phe	Leu	Val	Gly	Leu	Asn	Gln	1330	1335	1340	
	Tyr	Leu	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu	Pro	Glu	Pro	Asp	Val	Ala	1345	1350	1355	1360
	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser	His	Ile	Thr	Ala	Glu	Thr	1365	1370	1375	
15	Ala	Lys	Arg	Arg	Leu	Ala	Arg	Gly	Ser	Pro	Pro	Ser	Leu	Ala	Ser	Ser	1380	1385	1390	
	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	Ser	Leu	Lys	Ala	Thr	Cys	Thr	Thr	1395	1400	1405	
20	Arg	His	Asp	Ser	Pro	Asp	Ala	Asp	Leu	Ile	Glu	Ala	Asn	Leu	Leu	Trp	1410	1415	1420	
	Arg	Gln	Glu	Met	Gly	Gly	Asn	Ile	Thr	Arg	Val	Glu	Ser	Glu	Asn	Lys	1425	1430	1435	1440
	Val	Val	Ile	Leu	Asp	Ser	Phe	Glu	Pro	Leu	Gln	Ala	Glu	Glu	Asp	Glu	1445	1450	1455	
25	Arg	Glu	Val	Ser	Val	Pro	Ala	Glu	Ile	Leu	Arg	Arg	Ser	Arg	Lys	Phe	1460	1465	1470	
	Pro	Arg	Ala	Met	Pro	Ile	Trp	Ala	Arg	Pro	Asp	Tyr	Asn	Pro	Pro	Leu	1475	1480	1485	
30	Xaa	Glu	Ser	Trp	Lys	Asp	Pro	Asp	Tyr	Val	Pro	Pro	Val	Val	His	Gly	1490	1495	1500	
	Cys	Pro	Leu	Pro	Pro	Ala	Lys	Ala	Pro	Pro	Ile	Pro	Pro	Pro	Arg	Arg	1505	1510	1515	1520
	Lys	Arg	Thr	Val	Val	Leu	Ser	Glu	Ser	Thr	Val	Ser	Ser	Ala	Leu	Ala	1525	1530	1535	
35	Glu	Leu	Ala	Thr	Lys	Thr	Phe	Gly	Ser	Ser	Glu	Ser	Ser	Ala	Val	Asp	1540	1545	1550	
	Ser	Gly	Thr	Ala	Thr	Ala	Ser	Pro	Asp	Gln	Pro	Ser	Asp	Asp	Gly	Asp	1555	1560	1565	
40	Ala	Gly	Ser	Asp	Val	Glu	Ser	Tyr	Ser	Ser	Met	Pro	Pro	Leu	Glu	Gly	1570	1575	1580	
	Glu	Pro	Gly	Asp	Pro	Asp	Leu	Ser	Asp	Gly	Ser	Trp	Ser	Thr	Val	Ser	1585	1590	1595	1600
	Glu	Glu	Ala	Ser	Glu	Asp	Val	Val	Cys	Cys	Ser	Met	Ser	Tyr	Thr	Trp	1605	1610	1615	
45	Thr	Gly	Ala	Leu	Ile	Thr	Pro	Cys	Ala	Ala	Glu	Glu	Thr	Lys	Leu	Pro	1620	1625	1630	
	Ile	Asn	Ala	Leu	Ser	Asn	Ser	Leu	Leu	Arg	His	His	Asn	Leu	Val	Tyr	1635	1640	1645	
50	Ala	Thr	Thr	Ser	Arg	Ser	Ala	Ser	Leu	Arg	Gln	Lys	Lys	Val	Thr	Phe	1650	1655	1660	
	Asp	Arg	Leu	Gln	Val	Leu	Asp	Asp	His	Tyr	Arg	Asp	Val	Leu	Lys	Glu	1665	1670	1675	1680
	Met	Lys	Ala	Lys	Ala	Ser	Thr	Val	Lys	Ala	Lys	Leu	Leu	Ser	Val	Glu	1685	1690	1695	
55	Glu	Ala	Cys	Lys	Leu	Thr	Pro	Pro	His	Ser	Ala	Arg	Ser	Lys	Phe	Gly	1700	1705	1710	
	Tyr	Gly	Ala	Lys	Asp	Val	Arg	Asn	Leu	Ser	Ser	Lys	Ala	Val	Asn	His				

	Ile	Arg	Ser	Val	Trp	Lys	Asp	Leu	Leu	Glu	Asp	Thr	Glu	Thr	Pro	Ile
	1715						1720					1725				
									1735				1740			
5	Asp	Thr	Thr	Ile	Met	Ala	Lys	Asn	Glu	Val	Phe	Cys	Val	Gln	Pro	Glu
	1730						1750					1755				
										1760						
	Lys	Gly	Gly	Arg	Lys	Pro	Ala	Arg	Leu	Ile	Val	Phe	Pro	Asp	Leu	Gly
	1765						1770					1775				
	Val	Arg	Val	Cys	Glu	Lys	Met	Ala	Leu	Tyr	Asp	Val	Val	Ser	Thr	Leu
	1780						1785					1790				
10	Pro	Gln	Ala	Val	Met	Gly	Ser	Ser	Tyr	Gly	Phe	Gln	Tyr	Ser	Pro	Gly
	1795						1800					1805				
	Gln	Arg	Val	Glu	Phe	Leu	Val	Asn	Ala	Trp	Lys	Ala	Lys	Lys	Cys	Pro
	1810						1815					1820				
15	Met	Gly	Phe	Ala	Tyr	Asp	Thr	Arg	Cys	Phe	Asp	Ser	Thr	Val	Thr	Glu
	1825						1830					1835				
										1840						
	Asn	Asp	Ile	Arg	Val	Glu	Glu	Ser	Ile	Tyr	Gln	Cys	Cys	Asp	Leu	Ala
	1845						1850					1855				
	Pro	Glu	Ala	Arg	Gln	Ala	Ile	Arg	Ser	Leu	Thr	Glu	Arg	Leu	Tyr	Ile
	1860						1865					1870				
20	Gly	Gly	Pro	Leu	Thr	Asn	Ser	Lys	Gly	Gln	Asn	Cys	Gly	Tyr	Arg	Arg
	1875						1880					1885				
	Cys	Arg	Ala	Ser	Gly	Val	Leu	Thr	Thr	Ser	Cys	Gly	Asn	Thr	Leu	Thr
	1890						1895					1900				
25	Cys	Tyr	Leu	Lys	Ala	Ala	Ala	Ala	Cys	Arg	Ala	Ala	Lys	Leu	Gln	Asp
	1905						1910					1915				
										1920						
	Cys	Thr	Met	Leu	Val	Cys	Gly	Asp	Asp	Leu	Val	Val	Ile	Cys	Glu	Ser
	1925						1930					1935				
	Ala	Gly	Thr	Gln	Glu	Asp	Glu	Ala	Ser	Leu	Arg	Ala	Phe	Thr	Glu	Ala
	1940						1945					1950				
30	Met	Thr	Arg	Tyr	Ser	Ala	Pro	Pro	Gly	Asp	Pro	Pro	Lys	Pro	Glu	Tyr
	1955						1960					1965				
	Asp	Leu	Glu	Leu	Ile	Thr	Ser	Cys	Ser	Ser	Asn	Val	Ser	Val	Ala	His
	1970						1975					1980				
35	Asp	Ala	Ser	Gly	Lys	Arg	Val	Tyr	Tyr	Leu	Thr	Arg	Asp	Pro	Thr	Thr
	1985						1990					1995				
										2000						
	Pro	Leu	Ala	Arg	Ala	Ala	Trp	Glu	Thr	Ala	Arg	His	Thr	Pro	Val	Asn
	2005						2010					2015				
	Ser	Trp	Leu	Gly	Asn	Ile	Ile	Met	Tyr	Ala	Pro	Thr	Leu	Trp	Ala	Arg
	2020						2025					2030				
40	Met	Ile	Leu	Met	Thr	His	Phe	Phe	Ser	Ile	Leu	Leu	Ala	Gln	Glu	Gln
	2035						2040					2045				
	Leu	Glu	Lys	Ala	Leu	Asp	Cys	Gln	Ile	Tyr	Gly	Ala	Cys	Tyr	Ser	Ile
	2050						2055					2060				
45	Glu	Pro	Leu	Asp	Leu	Pro	Gln	Ile	Ile	Gln	Arg	Leu	His	Gly	Leu	Ser
	2065						2070					2075				
										2080						
	Ala	Phe	Ser	Leu	His	Ser	Tyr	Ser	Pro	Gly	Glu	Ile	Asn	Arg	Val	Ala
	2085						2090					2095				
	Ser	Cys	Leu	Arg	Lys	Leu	Gly	Val	Pro	Pro	Leu	Arg	Val	Trp	Arg	His
	2100						2105					2110				
50	Arg	Ala	Arg	Ser	Val	Arg	Ala	Arg	Leu	Leu	Ser	Gln	Gly	Gly	Arg	Ala
	2115						2120					2125				
	Ala	Thr	Cys	Gly	Lys	Tyr	Leu	Phe	Asn	Trp	Ala					

Ala Arg Pro Arg Trp Phe Met Trp Cys Leu Leu Leu Leu Ser Val Gly
 2180 2185 2190
 Val Gly Ile Tyr Leu Leu Pro Asn Arg
 2195 2200

5

<210> 5
 <211> 8648
 <212> DNA
 <213> HCV

10

<220>
 <221> CDS
 <222> (1802)...(8407)

15

<400> 5
 gccagccccc gattgggggc gacactccac catagatcac tcccctgtga ggaactactg 60
 tcttcacgca gaaagcgtct agccatggcg ttagtatgag tgctcgtgcag cctccaggac 120
 cccccctccc gggagagcca tagtggtctg cggaaccggt gagtacaccg gaattgccag 180
 20 gacgaccggg tcttttcttg gatcaaccgg ctcaatgcct ggagatttgg gcgtgcccc 240
 gcgagactgc tagccgagta gtgttggtgc gcgaaaggcc ttgtggtact gcctgatagg 300
 gtgcttgcca gtgccccggg aggtctcgta gaccgtgcac catgagcacg aatcctaacc 360
 ctcaaagaaa aaccaaaggg cgcgccatga ttgaacaaga tggattgcac gcagggttctc 420
 cggccgcttg ggtggagagg ctattcggct atgactgggc acaacagaca atcggctgct 480
 25 ctgatgccgc cgtgttccgg ctgtcagcgc aggggcgccc ggttcttttt gtcaagaccg 540
 acctgtccgg tgccctgaat gaactgcagg acgaggcagc gcggctatcg tggctggcca 600
 cgacgggcgt tcttgccgca gctgtgctcg acgttgtcac tgaagcggga agggactggc 660
 tgctattggg cgaagtgccg gggcaggatc tcctgtcatc tcaccttgct cctgccgaga 720
 aagtatccat catggctgat gcaatgcggc ggctgcatac gcttgatccg gctacctgcc 780
 30 cattcgacca ccaagcgaaa catcgcatcg agcgagcacg tactcggatg gaagccggtc 840
 ttgtcgatca ggatgatctg gacgaagagc atcaggggct cgcgccagcc gaactgttcg 900
 ccaggctcaa ggcgcgcgatg cccgacggcg aggatctcgt cgtgacccat ggcatgcct 960
 gcttgccgaa tatcatggtg gaaaatggcc gcttttcttg attcatcgac tgtggccggc 1020
 tgggtgtggc ggaccgctat caggacatag cgttggctac ccgtgatatt gctgaagagc 1080
 35 ttggcggcga atgggctgac cgttccctcg tgctttacgg tatcgccgct cccgattcgc 1140
 agcgcacgcg cttctatcgc cttcttgacg agttcttctg agttcgcgcc cagatgttaa 1200
 cagaccacaa cggtttccct cttagcgggat caattccgcc ccccccccta acgttactgg 1260
 ccgaagccgc ttggaataag gccggtgtgc gtttgtctat atgttatttt ccaccatatt 1320
 gccgtctttt ggcaatgtga gggcccgga acctggccct gtcttcttga cgagcattcc 1380
 40 taggggtctt tcccctctcg ccaaaggaat gcaaggctctg ttgaatgtcg tgaaggaagc 1440
 agttcctctg gaagcttctt gaagacaaac aacgtctgta gcgacccttt gcaggcagcg 1500
 gaacccccca cctggcgaca ggtgcctctg cggccaaaag ccacgtgtat aagatacacc 1560
 tgcaaaggcg gcacaacccc agtgccacgt tgtgagttgg atagttgtgg aaagagtcaa 1620
 atggctctcc tcaagcgtat tcaacaaggg gctgaaggat gccagaagg taccctattg 1680
 45 tatgggatct gatctggggc ctcggtgcac atgctttaca tgtgtttagt cgagggtaaa 1740
 aaacgtctag gcccccgaa ccacggggac gtggttttcc tttgaaaaac acgataatac 1800
 c atg gac cgg gag atg gca gca tcg tgc gga ggc gcg gtt ttc gta ggt 1849
 Met Asp Arg Glu Met Ala Ala Ser Cys Gly Gly Ala Val Phe Val Gly
 1 5 10 15

50

ctg ata ctc ttg acc ttg tca ccg cac tat aag ctg ttc ctc gct agg 1897
 Leu Ile Leu Leu Thr Leu Ser Pro His Tyr Lys Leu Phe Leu Ala Arg
 20 25 30

55

ctc ata tgg tgg tta caa tat ttt atc acc agg gcc gag gca cac ttg 1945
 Leu Ile Trp Trp Leu Gln Tyr Phe Ile Thr Arg Ala Glu Ala His Leu
 35 40 45

	caa gtg tgg atc ccc ccc ctc aac gtt cgg ggg ggc cgc gat gcc gtc	1993
	Gln Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Val	
	50 55 60	
5	atc ctc ctc acg tgc gcg atc cac cca gag cta atc ttt acc atc acc	2041
	Ile Leu Leu Thr Cys Ala Ile His Pro Glu Leu Ile Phe Thr Ile Thr	
	65 70 75 80	
10	aaa atc ttg ctc gcc ata ctc ggt cca ctc atg gtg ctc cag gct ggt	2089
	Lys Ile Leu Leu Ala Ile Leu Gly Pro Leu Met Val Leu Gln Ala Gly	
	85 90 95	
15	ata acc aaa gtg ccg tac ttc gtg cgc gca cac ggg ctc att cgt gca	2137
	Ile Thr Lys Val Pro Tyr Phe Val Arg Ala His Gly Leu Ile Arg Ala	
	100 105 110	
20	tgc atg ctg gtg ccg aag gtt gct ggg ggt cat tat gtc caa atg gct	2185
	Cys Met Leu Val Arg Lys Val Ala Gly Gly His Tyr Val Gln Met Ala	
	115 120 125	
25	ctc atg aag ttg gcc gca ctg aca ggt acg tac gtt tat gac cat ctc	2233
	Leu Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu	
	130 135 140	
30	acc cca ctg ccg gac tgg gcc cac gcg ggc cta cga gac ctt gcg gtg	2281
	Thr Pro Leu Arg Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val	
	145 150 155 160	
35	gca gtt gag ccc gtc gtc ttc tct gat atg gag acc aag gtt atc acc	2329
	Ala Val Glu Pro Val Val Phe Ser Asp Met Glu Thr Lys Val Ile Thr	
	165 170 175	
40	tgg ggg gca gac acc gcg gcg tgt ggg gac atc atc ttg ggc ctg ccc	2377
	Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Leu Gly Leu Pro	
	180 185 190	
45	gtc tcc gcc cgc agg ggg agg gag ata cat ctg gga ccg gca gac agc	2425
	Val Ser Ala Arg Arg Gly Arg Glu Ile His Leu Gly Pro Ala Asp Ser	
	195 200 205	
50	ctt gaa ggg cag ggg tgg cga ctc ctc gcg cct att acg gcc tac tcc	2473
	Leu Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser	
	210 215 220	
55	caa cag acg cga ggc cta ctt ggc tgc atc atc act agc ctc aca ggc	2521
	Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly	
	225 230 235 240	
60	cgg gac agg aac cag gtc gag ggg gag gtc caa gtg gtc tcc acc gca	2569
	Arg Asp Arg Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala	
	245 250 255	
65	aca caa tct ttc ctg gcg acc tgc gtc aat ggc gtg tgt tgg act gtc	2617
	Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val	
	260 265 270	

	tat cat ggt gcc ggc tca aag acc ctt gcc ggc cca aag ggc cca atc	2665
	Tyr His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile	
	275 280 285	
5	acc caa atg tac acc aat gtg gac cag gac ctc gtc ggc tgg caa gcg	2713
	Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala	
	290 295 300	
10	ccc ccc ggg gcg cgt tcc ttg aca cca tgc acc tgc ggc agc tcg gac	2761
	Pro Pro Gly Ala Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp	
	305 310 315 320	
15	ctt tac ttg gtc acg agg cat gcc gat gtc att ccg gtg cgc cgg cgg	2809
	Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg	
	325 330 335	
20	ggc gac agc agg ggg agc cta ctc tcc ccc agg ccc gtc tcc tac ttg	2857
	Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu	
	340 345 350	
	aag ggc tct tcg ggc ggt cca ctg ctc tgc ccc tcg ggg cac gct gtg	2905
	Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val	
	355 360 365	
25	ggc atc ttt cgg gct gcc gtg tgc acc cgg ggg gtt gcg aag gcg gtg	2953
	Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val	
	370 375 380	
30	gac ttt gta ccc gtc gag tct atg gga acc act atg cgg tcc ccg gtc	3001
	Asp Phe Val Pro Val Glu Ser Met Gly Thr Thr Met Arg Ser Pro Val	
	385 390 395 400	
35	ttc acg gac aac tcg tcc cct ccg gcc gta ccg cag aca ttc cag gtg	3049
	Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro Gln Thr Phe Gln Val	
	405 410 415	
40	gcc cat cta cac gcc cct act ggt agc ggc aag agc act aag gtg ccg	3097
	Ala His Leu His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val Pro	
	420 425 430	
	gct gcg tat gca gcc caa ggg tat aag gtg ctt gtc ctg aac ccg tcc	3145
	Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro Ser	
	435 440 445	
45	gtc gcc gcc acc cta ggt ttc ggg gcg tat atg tct aag gca cat ggt	3193
	Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His Gly	
	450 455 460	
50	atc gac cct aac atc aga acc ggg gta agg acc atc acc acg ggt gcc	3241
	Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly Ala	
	465 470 475 480	
55	ccc atc acg tac tcc acc tat ggc aag ttt ctt gcc gac ggt ggt tgc	3289
	Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys	
	485 490 495	
	tct ggg ggc gcc tat gac atc ata ata tgt gat gag tgc cac tca act	3337

	Ser	Gly	Gly	Ala	Tyr	Asp	Ile	Ile	Ile	Cys	Asp	Glu	Cys	His	Ser	Thr	
				500						505				510			
5	gac	tcg	acc	act	atc	ctg	ggc	atc	ggc	aca	gtc	ctg	gac	caa	gcg	gag	3385
	Asp	Ser	Thr	Thr	Ile	Leu	Gly	Ile	Gly	Thr	Val	Leu	Asp	Gln	Ala	Glu	
			515					520					525				
10	acg	gct	gga	gcg	cga	ctc	gtc	gtg	ctc	gcc	acc	gct	acg	cct	ccg	gga	3433
	Thr	Ala	Gly	Ala	Arg	Leu	Val	Val	Leu	Ala	Thr	Ala	Thr	Pro	Pro	Gly	
			530					535					540				
15	tcg	gtc	acc	gtg	cca	cat	cca	aac	atc	gag	gag	gtg	gct	ctg	tcc	agc	3481
	Ser	Val	Thr	Val	Pro	His	Pro	Asn	Ile	Glu	Glu	Val	Ala	Leu	Ser	Ser	
						550						555				560	
20	act	gga	gaa	atc	ccc	ttt	tat	ggc	aaa	gcc	atc	ccc	atc	gag	acc	atc	3529
	Thr	Gly	Glu	Ile	Pro	Phe	Tyr	Gly	Lys	Ala	Ile	Pro	Ile	Glu	Thr	Ile	
					565					570					575		
25	aag	ggg	ggg	agg	cac	ctc	att	ttc	tgc	cat	tcc	aag	aag	aaa	tgt	gat	3577
	Lys	Gly	Gly	Arg	His	Leu	Ile	Phe	Cys	His	Ser	Lys	Lys	Lys	Cys	Asp	
				580					585					590			
30	gag	ctc	gcc	gcg	aag	ctg	tcc	ggc	ctc	gga	ctc	aat	gct	gta	gca	tat	3625
	Glu	Leu	Ala	Ala	Lys	Leu	Ser	Gly	Leu	Gly	Leu	Asn	Ala	Val	Ala	Tyr	
			595					600					605				
35	tac	cgg	ggc	ctt	gat	gta	tcc	gtc	ata	cca	act	agc	gga	gac	gtc	att	3673
	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	Ile	Pro	Thr	Ser	Gly	Asp	Val	Ile	
			610				615					620					
40	gtc	gta	gca	acg	gac	gct	cta	atg	acg	ggc	ttt	acc	ggc	gat	ttc	gac	3721
	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr	Gly	Phe	Thr	Gly	Asp	Phe	Asp	
			625			630					635					640	
45	tca	gtg	atc	gac	tgc	aat	aca	tgt	gtc	acc	cag	aca	gtc	gac	ttc	agc	3769
	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr	Gln	Thr	Val	Asp	Phe	Ser	
					645					650					655		
50	ctg	gac	ccg	acc	ttc	acc	att	gag	acg	acg	acc	gtg	cca	caa	gac	gcg	3817
	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Thr	Thr	Val	Pro	Gln	Asp	Ala	
				660				665						670			
55	gtg	tca	cgc	tcg	cag	cgg	cga	ggc	agg	act	ggt	agg	ggc	agg	atg	ggc	3865
	Val	Ser	Arg	Ser	Gln	Arg	Arg	Gly	Arg	Thr	Gly	Arg	Gly	Arg	Met	Gly	
			675					680					685				
60	att	tac	agg	ttt	gtg	act	cca	gga	gaa	cgg	ccc	tcg	ggc	atg	ttc	gat	3913
	Ile	Tyr	Arg	Phe	Val	Thr	Pro	Gly	Glu	Arg	Pro	Ser	Gly	Met	Phe	Asp	
			690				695					700					
65	tcc	tcg	gtt	ctg	tgc	gag	tgc	tat	gac	gcg	ggc	tgt	gct	tgg	tac	gag	3961
	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	Gly	Cys	Ala	Trp	Tyr	Glu	
			705			710					715					720	
70	ctc	acg	ccc	gcc	gag	acc	tca	gtt	agg	ttg	cgg	gct	tac	cta	aac	aca	4009
	Leu	Thr	Pro	Ala	Glu	Thr	Ser	Val	Arg	Leu	Arg	Ala	Tyr	Leu	Asn	Thr	

	725	730	735	
5	cca ggg ttg ccc gtc tgc cag gac cat ctg gag ttc tgg gag agc gtc Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Ser Val 740 745 750	4057		
10	ttt aca ggc ctc acc cac ata gac gcc cat ttc ttg tcc cag act aag Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys 755 760 765	4105		
15	cag gca gga gac aac ttc ccc tac ctg gta gca tac cag gct acg gtg Gln Ala Gly Asp Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val 770 775 780	4153		
20	tgc gcc agg gct cag gct cca cct cca tcg tgg gac caa atg tgg aag Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp Lys 785 790 795 800	4201		
25	tgt ctc ata cgg cta aag cct acg ctg cac ggg cca acg ccc ctg ctg Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu 805 810 815	4249		
30	tat agg ctg gga gcc gtt caa aac gag gtt act acc aca cac ccc ata Tyr Arg Leu Gly Ala Val Gln Asn Glu Val Thr Thr Thr His Pro Ile 820 825 830	4297		
35	acc aaa tac atc atg gca tgc atg tcg gct gac ctg gag gtc gtc acg Thr Lys Tyr Ile Met Ala Cys Met Ser Ala Asp Leu Glu Val Val Thr 835 840 845	4345		
40	agc acc tgg gtg ctg gta ggc gga gtc cta gca gct ctg gcc gcg tat Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr 850 855 860	4393		
45	tgc ctg aca aca ggc agc gtg gtc att gtg ggc agg atc atc ttg tcc Cys Leu Thr Thr Gly Ser Val Val Ile Val Gly Arg Ile Ile Leu Ser 865 870 875 880	4441		
50	gga aag ccg gcc atc att ccc gac agg gaa gtc ctt tac cgg gag ttc Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe 885 890 895	4489		
55	gat gag atg gaa gag tgc gcc tca cac ctc cct tac atc gaa cag gga Asp Glu Met Glu Glu Cys Ala Ser His Leu Pro Tyr Ile Glu Gln Gly 900 905 910	4537		
60	atg cag ctc gcc gaa caa ttc aaa cag aag gca atc ggg ttg ctg caa Met Gln Leu Ala Glu Gln Phe Lys Gln Lys Ala Ile Gly Leu Leu Gln 915 920 925	4585		
65	aca gcc acc aag caa gcg gag gct gct gct ccc gtg gtg gaa tcc aag Thr Ala Thr Lys Gln Ala Glu Ala Ala Pro Val Val Glu Ser Lys 930 935 940	4633		
70	tgg cgg acc ctc gaa gcc ttc tgg gcg aag cat atg tgg aat ttc atc Trp Arg Thr Leu Glu Ala Phe Trp Ala Lys His Met Trp Asn Phe Ile 945 950 955 960	4681		

	agc ggg ata caa tat tta gca ggc ttg tcc act ctg cct ggc aac ccc	4729
	Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn Pro	
	965 970 975	
5	gcg ata gca tca ctg atg gca ttc aca gcc tct atc acc agc ccg ctc	4777
	Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ser Ile Thr Ser Pro Leu	
	980 985 990	
10	acc acc caa cat acc ctc ctg ttt aac atc ctg ggg gga tgg gtg gcc	4825
	Thr Thr Gln His Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Ala	
	995 1000 1005	
15	gcc caa ctt gct cct ccc agc gct gct tct gct ttc gta ggc gcc gcc	4873
	Ala Gln Leu Ala Pro Pro Ser Ala Ala Ser Ala Phe Val Gly Ala Gly	
	1010 1015 1020	
20	atc gct gga gcg gct gtt ggc agc ata ggc ctt ggg aag gtg ctt gtg	4921
	Ile Ala Gly Ala Ala Val Gly Ser Ile Gly Leu Gly Lys Val Leu Val	
	1025 1030 1035 1040	
25	gat att ttg gca ggt tat gga gca ggg gtg gca ggc gcg ctc gtg gcc	4969
	Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val Ala	
	1045 1050 1055	
30	ttt aag gtc atg agc ggc gag atg ccc tcc acc gag gac ctg gtt aac	5017
	Phe Lys Val Met Ser Gly Glu Met Pro Ser Thr Glu Asp Leu Val Asn	
	1060 1065 1070	
35	cta ctc cct gct atc ctc tcc cct ggc gcc cta gtc gtc ggg gtc gtg	5065
	Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val Val	
	1075 1080 1085	
40	tgc gca gcg ata ctg cgt cgg cac gtg ggc cca ggg gag ggg gct gtg	5113
	Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala Val	
	1090 1095 1100	
45	cag tgg atg aac cgg ctg ata gcg ttc gct tgc cgg ggt aac cac gtc	5161
	Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His Val	
	1105 1110 1115 1120	
50	tcc ccc acg cac tat gtg cct gag agc gac gct gca gca cgt gtc act	5209
	Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val Thr	
	1125 1130 1135	
55	cag atc ctc tct agt ctt acc atc act cag ctg ctg aag agg ctt cac	5257
	Gln Ile Leu Ser Ser Leu Thr Ile Thr Gln Leu Leu Lys Arg Leu His	
	1140 1145 1150	
60	cag tgg atc aac gag gac tgc tcc acg cca tgc tcc ggc tgc tgg cta	5305
	Gln Trp Ile Asn Glu Asp Cys Ser Thr Pro Cys Ser Gly Ser Trp Leu	
	1155 1160 1165	
65	aga gat gtt tgg gat tgg gta tgc acg gtg ttg act gat ttc aag acc	5353
	Arg Asp Val Trp Asp Trp Val Cys Thr Val Leu Thr Asp Phe Lys Thr	
	1170 1175 1180	

	tgg ctc cag tcc aag ctc ctg ccg cga ttg ccg gga gtc ccc ttc ttc	5401
	Trp Leu Gln Ser Lys Leu Leu Pro Arg Leu Pro Gly Val Pro Phe Phe	
	1185 1190 1195 1200	
5	tca tgt caa cgt ggg tac aag gga gtc tgg cgg ggc gac ggc atc atg	5449
	Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile Met	
	1205 1210 1215	
10	caa acc acc tgc cca tgt gga gca cag atc acc gga cat gtg aaa aac	5497
	Gln Thr Thr Cys Pro Cys Gly Ala Gln Ile Thr Gly His Val Lys Asn	
	1220 1225 1230	
15	tgt tcc atg agg atc gtg ggg cct agg acc tgt agt aac acg tgg cat	5545
	Cys Ser Met Arg Ile Val Gly Pro Arg Thr Cys Ser Asn Thr Trp His	
	1235 1240 1245	
20	gga aca ttc ccc att aac gcg tac acc acg ggc ccc tgc acg ccc tcc	5593
	Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro Ser	
	1250 1255 1260	
	ccg gcg cca aat tat tct agg gcg ctg tgg cgg gtg gct gct gag gag	5641
	Pro Ala Pro Asn Tyr Ser Arg Ala Leu Trp Arg Val Ala Ala Glu Glu	
	1265 1270 1275 1280	
25	tac gtg gag gtt acg cgg gtg ggg gat ttc cac tac gtg acg ggc atg	5689
	Tyr Val Glu Val Thr Arg Val Gly Asp Phe His Tyr Val Thr Gly Met	
	1285 1290 1295	
30	acc act gac aac gta aag tgc ccg tgt cag gtt ccg gcc ccc gaa ttc	5737
	Thr Thr Asp Asn Val Lys Cys Pro Cys Gln Val Pro Ala Pro Glu Phe	
	1300 1305 1310	
35	ttc aca gaa gtg gat ggg gtg cgg ttg cac agg tac gct cca gcg tgc	5785
	Phe Thr Glu Val Asp Gly Val Arg Leu His Arg Tyr Ala Pro Ala Cys	
	1315 1320 1325	
40	aaa ccc ctc cta cgg gag gag gtc aca ttc ctg gtc ggg ctc aat caa	5833
	Lys Pro Leu Leu Arg Glu Glu Val Thr Phe Leu Val Gly Leu Asn Gln	
	1330 1335 1340	
	tac ctg gtt ggg tca cag ctc cca tgc gag ccc gaa ccg gac gta gca	5881
	Tyr Leu Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val Ala	
	1345 1350 1355 1360	
45	gtg ctc act tcc atg ctc acc gac ccc tcc cac att acg gcg gag acg	5929
	Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu Thr	
	1365 1370 1375	
50	gct aag cgt agg ctg gcc agg gga tct ccc ccc tcc ttg gcc agc tca	5977
	Ala Lys Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Leu Ala Ser Ser	
	1380 1385 1390	
55	tca gct agc cag ctg tct gcg ccc tcc ttg aag gca aca tgc act acc	6025
	Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr Thr	
	1395 1400 1405	
	cgt cat gac tcc ccg gac gct gac ctc atc gag gcc aac ctc ctg tgg	6073

	Arg His Asp Ser Pro Asp Ala Asp Leu Ile Glu Ala Asn Leu Leu Trp	
	1410 1415 1420	
5	cgg cag gag atg ggc ggg aac atc acc cgc gtg gag tca gaa aat aag Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn Lys	6121
	1425 1430 1435 1440	
10	gta gta att ttg gac tct ttc gag ccg ctc caa gcg gag gag gat gag Val Val Ile Leu Asp Ser Phe Glu Pro Leu Gln Ala Glu Glu Asp Glu	6169
	1445 1450 1455	
15	agg gaa gta tcc gtt ccg gcg gag atc ctg ccg agg tcc agg aaa ttc Arg Glu Val Ser Val Pro Ala Glu Ile Leu Arg Arg Ser Arg Lys Phe	6217
	1460 1465 1470	
20	cct cga gcg atg ccc ata tgg gca cgc ccg gat tac aac cct cca ctg Pro Arg Ala Met Pro Ile Trp Ala Arg Pro Asp Tyr Asn Pro Pro Leu	6265
	1475 1480 1485	
25	tta gag tcc tgg aag gac ccg gac tac gtc cct cca gtg gta cac ggg Leu Glu Ser Trp Lys Asp Pro Asp Tyr Val Pro Pro Val Val His Gly	6313
	1490 1495 1500	
30	tgt cca ttg ccg cct gcc aag gcc cct ccg ata cca cct cca ccg agg Cys Pro Leu Pro Pro Ala Lys Ala Pro Pro Ile Pro Pro Pro Arg Arg	6361
	1505 1510 1515 1520	
35	aag agg acg gtt gtc ctg tca gaa tct acc gtg tct tct gcc ttg gcg Lys Arg Thr Val Val Leu Ser Glu Ser Thr Val Ser Ser Ala Leu Ala	6409
	1525 1530 1535	
40	gag ctc gcc aca aag acc ttc ggc agc tcc gaa tcg tcg gcc gtc gac Glu Leu Ala Thr Lys Thr Phe Gly Ser Ser Glu Ser Ser Ala Val Asp	6457
	1540 1545 1550	
45	agc ggc acg gca acg gcc tct cct gac cag ccc tcc gac gac ggc gac Ser Gly Thr Ala Thr Ala Ser Pro Asp Gln Pro Ser Asp Asp Gly Asp	6505
	1555 1560 1565	
50	gcg gga tcc gac gtt gag tcg tac tcc tcc atg ccc ccc ctt gag ggg Ala Gly Ser Asp Val Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu Gly	6553
	1570 1575 1580	
55	gag ccg ggg gat ccc gat ctc agc gac ggg tct tgg tct acc gta agc Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val Ser	6601
	1585 1590 1595 1600	
60	gag gag gct agt gag gac gtc gtc tgc tgc tcg atg tcc tac aca tgg Glu Glu Ala Ser Glu Asp Val Val Cys Cys Ser Met Ser Tyr Thr Trp	6649
	1605 1610 1615	
65	aca ggc gcc ctg atc acg cca tgc gct gcg gag gaa acc aag ctg ccc Thr Gly Ala Leu Ile Thr Pro Cys Ala Ala Glu Glu Thr Lys Leu Pro	6697
	1620 1625 1630	
70	atc aat gca ctg agc aac tct ttg ctc cgt cac cac aac ttg gtc tat Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu Val Tyr	6745

	1635	1640	1645	
5	gct aca aca tct cgc agc gca agc ctg cgg cag aag aag gtc acc ttt Ala Thr Thr Ser Arg Ser Ala Ser Leu Arg Gln Lys Lys Val Thr Phe 1650 1655 1660			6793
10	gac aga ctg cag gtc ctg gac gac cac tac cgg gac gtg ctc aag gag Asp Arg Leu Gln Val Leu Asp Asp His Tyr Arg Asp Val Leu Lys Glu 1665 1670 1675 1680			6841
	atg aag gcg aag gcg tcc aca gtt aag gct aaa ctt cta tcc gtg gag Met Lys Ala Lys Ala Ser Thr Val Lys Ala Lys Leu Leu Ser Val Glu 1685 1690 1695			6889
15	gaa gcc tgt aag ctg acg ccc cca cat tcg gcc aga tct aaa ttt ggc Glu Ala Cys Lys Leu Thr Pro Pro His Ser Ala Arg Ser Lys Phe Gly 1700 1705 1710			6937
20	tat ggg gca aag gac gtc cgg aac cta tcc agc aag gcc gtt aac cac Tyr Gly Ala Lys Asp Val Arg Asn Leu Ser Ser Lys Ala Val Asn His 1715 1720 1725			6985
25	atc cgc tcc gtg tgg aag gac ttg ctg gaa gac act gag aca cca att Ile Arg Ser Val Trp Lys Asp Leu Leu Glu Asp Thr Glu Thr Pro Ile 1730 1735 1740			7033
30	gac acc acc atc atg gca aaa aat gag gtt ttc tgc gtc caa cca gag Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln Pro Glu 1745 1750 1755 1760			7081
	aag ggg ggc cgc aag cca gct cgc ctt atc gta ttc cca gat ttg ggg Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp Leu Gly 1765 1770 1775			7129
35	gtt cgt gtg tgc gag aaa atg gcc ctt tac gat gtg gtc tcc acc ctc Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Ser Thr Leu 1780 1785 1790			7177
40	cct cag gcc gtg atg ggc tct tca tac gga ttc caa tac tct cct gga Pro Gln Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser Pro Gly 1795 1800 1805			7225
45	cag cgg gtc gag ttc ctg gtg aat gct tgg aaa gcg aag aaa tgc cct Gln Arg Val Glu Phe Leu Val Asn Ala Trp Lys Ala Lys Lys Cys Pro 1810 1815 1820			7273
50	atg ggc ttc gca tat gac acc cgc tgt ttt gac tca acg gtc act gag Met Gly Phe Ala Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val Thr Glu 1825 1830 1835 1840			7321
	aat gac atc cgt gtt gag gag tca atc tac caa tgt tgt gac ttg gcc Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln Cys Cys Asp Leu Ala 1845 1850 1855			7369
55	ccc gaa gcc aga cag gcc ata agg tcg ctc aca gag cgg ctt tac atc Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr Glu Arg Leu Tyr Ile 1860 1865 1870			7417

	ggg ggc ccc ctg act aat tct aaa ggg cag aac tgc ggc tat cgc cgg	7465
	Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn Cys Gly Tyr Arg Arg	
	1875 1880 1885	
5	tgc cgc gcg agc ggt gta ctg acg acc agc tgc ggt aat acc ctc aca	7513
	Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr Leu Thr	
	1890 1895 1900	
10	tgt tac ttg aag gcc gct gcg gcc tgt cga gct gcg aag ctc cag gac	7561
	Cys Tyr Leu Lys Ala Ala Ala Cys Arg Ala Ala Lys Leu Gln Asp	
	1905 1910 1915 1920	
15	tgc acg atg ctc gta tgc gga gac gac ctt gtc gtt atc tgt gaa agc	7609
	Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys Glu Ser	
	1925 1930 1935	
20	gcg ggg acc caa gag gac gag gcg agc cta cgg gcc ttc acg gag gct	7657
	Ala Gly Thr Gln Glu Asp Glu Ala Ser Leu Arg Ala Phe Thr Glu Ala	
	1940 1945 1950	
	atg act aga tac tct gcc ccc cct ggg gac ccg ccc aaa cca gaa tac	7705
	Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Lys Pro Glu Tyr	
	1955 1960 1965	
25	gac ttg gag ttg ata aca tca tgc tcc tcc aat gtg tca gtc gcg cac	7753
	Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val Ala His	
	1970 1975 1980	
30	gat gca tct ggc aaa agg gtg tac tat ctc acc cgt gac ccc acc acc	7801
	Asp Ala Ser Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro Thr Thr	
	1985 1990 1995 2000	
35	ccc ctt gcg cgg gct gcg tgg gag aca gct aga cac act cca gtc aat	7849
	Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro Val Asn	
	2005 2010 2015	
40	tcc tgg cta ggc aac atc atc atg tat gcg ccc acc ttg tgg gca agg	7897
	Ser Trp Leu Gly Asn Ile Ile Met Tyr Ala Pro Thr Leu Trp Ala Arg	
	2020 2025 2030	
	atg atc ctg atg act cat ttc ttc tcc atc ctt cta gct cag gaa caa	7945
	Met Ile Leu Met Thr His Phe Phe Ser Ile Leu Leu Ala Gln Glu Gln	
	2035 2040 2045	
45	ctt gaa aaa gcc cta gat tgt cag atc tac ggg gcc tgt tac tcc att	7993
	Leu Glu Lys Ala Leu Asp Cys Gln Ile Tyr Gly Ala Cys Tyr Ser Ile	
	2050 2055 2060	
50	gag cca ctt gac cta cct cag atc att caa cga ctc cac ggc ctt agc	8041
	Glu Pro Leu Asp Leu Pro Gln Ile Ile Gln Arg Leu His Gly Leu Ser	
	2065 2070 2075 2080	
55	gca ttt tca ctc cat agt tac tct cca ggt gag atc aat agg gtg gct	8089
	Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg Val Ala	
	2085 2090 2095	

tca tgc ctc agg aaa ctt ggg gta ccg ccc ttg cga gtc tgg aga cat 8137
Ser Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Val Trp Arg His
2100 2105 2110

5 cgg gcc aga agt gtc cgc gct agg cta ctg tcc cag ggg ggg agg gct 8185
Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ser Gln Gly Gly Arg Ala
2115 2120 2125

10 gcc act tgt ggc aag tac ctc ttc aac tgg gca gta agg acc aag ctc 8233
Ala Thr Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr Lys Leu
2130 2135 2140

15 aaa ctc act cca atc ccg gct gcg tcc cag ttg gat tta tcc agc tgg 8281
Lys Leu Thr Pro Ile Pro Ala Ala Ser Gln Leu Asp Leu Ser Ser Trp
2145 2150 2155 2160

20 ttc gtt gct ggt tac agc ggg gga gac ata tat cac agc ctg tct cgt 8329
Phe Val Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Leu Ser Arg
2165 2170 2175

gcc cga ccc cgc tgg ttc acg tgg tgc cta ctc cta ctt tct gta ggg 8377
Ala Arg Pro Arg Trp Phe Thr Trp Cys Leu Leu Leu Leu Ser Val Gly
2180 2185 2190

25 gta ggc atc tat cta ctc ccc aac cga tga acgaggagct aaacactcca 8427
Val Gly Ile Tyr Leu Leu Pro Asn Arg *
2195 2200

30 ggccaatagg ccacccctgtt tttttccctt ttttcccttt tttttttttt tttttttttt 8487
tttttttttt tttttttttt ttccccccct tttttccctt ttttttttcc ttttctttcc 8547
tttggtggct ccaccccttagc cctagtcacg gctagctgtg aaaggtccgt gagccgcttg 8607
actgcagaga gtgctgatac tggcctctct gcagatcaag t 8648

35 <210> 6
<211> 8638
<212> DNA
<213> HCV

40 <220>
<221> CDS
<222> (1802)...(8407)

<400> 6

45 accagcccc gattgggggc gacactccac catagatcac tcccctgtga ggaactactg 60
tcttcacgca gaaagcgtct agccatggcg ttagtatgag tgcgtgacg cctccaggac 120
ccccctccc gggagagcca tagtggtctg cggaaccggt gagtacaccg gaattgccag 180
gacgaccggg tcctttcttg gatcaaccgc ctcaatgcct ggagatttgg gcgtgcccc 240
gcgagactgc tagccgagta gtgttgggtc gcgaaaggcc ttgtgttact gcctgatagg 300
gtgcttgca gtgccccggg aggtctcgta gaccgtgcac catgagcac aatcctaaac 360
50 ctcaaagaaa aaccaaagg cgcccatga ttgaacaaga tggattgcac gcagggttctc 420
cggccgcttg ggtggagagg ctattcggct atgactgggc acaacagaca atcggctgct 480
ctgatgccgc cgtgttcgg ctgtcagcgc aggggcgccc ggttcttttt gtcaagaccg 540
acctgtccgg tgccctgaat gaactgcagg acgaggcagc gcggctatcg tggctggcca 600
cgacgggctg tccttgcgca gctgtgctcg acgttgtcac tgaagcggga agggactggc 660
55 tgctattggg cgaagtgcg gggcaggatc tcctgtcatc tcaccttgct cctgcccaga 720
aagtatccat catggctgat gcaatgcggc ggctgcatac gcttgatccg gctacctgcc 780
cattcgacca ccaagcgaaa catcgcatcg agcgagcac tactcggatg gaagccggtc 840

	ttgtcgatca	ggatgatctg	gacgaagagc	atcaggggct	cgcgccagcc	gaactgttcg	900
	ccaggctcaa	ggcgcgcatg	cccgaacggc	aggatctcgt	cgtgacccat	ggcgatgcct	960
	gcttgccgaa	tatcatggtg	gaaaatggcc	gcttttcttg	attcatcgac	tgtggccggc	1020
	tgggtgtggc	ggaccgctat	caggacatag	cgttggctac	ccgtgatatt	gctgaagagc	1080
5	ttggcggcga	atgggctgac	cgcttccctg	tgctttacgg	tatcgccgct	cccgattcgc	1140
	agcgcacgc	cttctatcgc	cttcttgacg	agttcttctg	agttcgcgcc	cagatgttaa	1200
	cagaccacaa	cggtttccct	ctagcgggat	caattccgcc	ccccccccta	acgttactgg	1260
	ccgaagccgc	ttggaataag	gccggtgtgc	gtttgtctat	atgttatatt	ccaccatatt	1320
	gccgtctttt	ggcaatgtga	gggcccggaa	acctggccct	gtcttcttga	cgagcattcc	1380
10	taggggtctt	tccccctctg	ccaaaggaat	gcaaggtctg	ttgaatgtcg	tgaaggaagc	1440
	agttcctctg	gaagcttctt	gaagacaaac	aacgtctgta	gcgacccttt	gcaggcagcg	1500
	gaacccccca	cctggcgaca	ggtgcctctg	cggccaaaag	ccacgtgtat	aagatacacc	1560
	tgcaaaggcg	gcacaacccc	agtgccacgt	tgtgagttgg	atagttgtgg	aaagagtcaa	1620
	atggctctcc	tcaagcgtat	tcaacaaggg	gctgaaggat	gcccagaagg	tacccattg	1680
15	tatgggatct	gatctggggc	ctcgggtgcac	atgctttaca	tgtgtttagt	cgagggttaa	1740
	aaacgtctag	gccccccgaa	ccacggggac	gtgggtttcc	tttgaaaaaac	acgataatac	1800
	c atg gac	cgg gag atg	gca gca tgc	tgc gga ggc	gcg gtt ttc	gta ggt	1849
	Met Asp Arg	Glu Met	Ala Ala Ser	Cys Gly Gly	Ala Val Phe	Val Gly	
	1	5	10	15			
20	ctg ata ctc	ttg acc ttg	tca ccg cac	tat aag ctg	ttc ctc gct	agg	1897
	Leu Ile Leu	Leu Thr Leu	Ser Pro His	Tyr Lys Leu	Phe Leu Ala	Arg	
		20	25	30			
25	ctc ata tgg	tgg tta caa	tat ttt atc	acc agg gcc	gag gca cac	ttg	1945
	Leu Ile Trp	Trp Leu Gln	Tyr Phe Ile	Thr Arg Ala	Glu Ala His	Leu	
		35	40	45			
30	caa gtg tgg	atc ccc ccc	ctc aac gtt	cgg ggg ggc	cgc gat gcc	gtc	1993
	Gln Val Trp	Ile Pro Pro	Leu Asn Val	Arg Gly Gly	Arg Asp Ala	Val	
		50	55	60			
35	atc ctc ctc	acg tgc gcg	atc cac cca	gag cta atc	ttt acc atc	acc	2041
	Ile Leu Leu	Thr Cys Ala	Ile His Pro	Glu Leu Ile	Phe Thr Ile	Thr	
	65	70	75	80			
40	aaa atc ttg	ctc gcc ata	ctc ggt cca	ctc atg gtg	ctc cag gct	ggt	2089
	Lys Ile Leu	Leu Ala Ile	Leu Gly Pro	Leu Met Val	Leu Gln Ala	Gly	
		85	90	95			
45	ata acc aaa	gtg ccg tac	ttc gtg cgc	gca cac ggg	ctc att cgt	gca	2137
	Ile Thr Lys	Val Pro Tyr	Phe Val Arg	Ala His Gly	Leu Ile Arg	Ala	
		100	105	110			
50	tgc atg ctg	gtg cgg aag	gtt gct ggg	ggt cat tat	gtc caa atg	gct	2185
	Cys Met Leu	Val Arg Lys	Val Ala Gly	Gly His Tyr	Val Gln Met	Ala	
		115	120	125			
55	ctc atg aag	ttg gcc gca	ctg aca ggt	acg tac gtt	tat gac cat	ctc	2233
	Leu Met Lys	Leu Ala Ala	Leu Thr Gly	Thr Tyr Val	Tyr Asp His	Leu	
		130	135	140			
60	acc cca ctg	cgg gac tgg	gcc cac gcg	ggc cta cga	gac ctt gcg	gtg	2281
	Thr Pro Leu	Arg Asp Trp	Ala His Ala	Gly Leu Arg	Asp Leu Ala	Val	
		145	150	155	160		
65	gca gtt gag	ccc gtc gtc	ttc tct gat	atg gag acc	aag gtt atc	acc	2329

	Ala	Val	Glu	Pro	Val	Val	Phe	Ser	Asp	Met	Glu	Thr	Lys	Val	Ile	Thr	
					165					170					175		
5	tgg	ggg	gca	gac	acc	gcg	gcg	tgt	ggg	gac	atc	atc	ttg	ggc	ctg	ccc	2377
	Trp	Gly	Ala	Asp	Thr	Ala	Ala	Cys	Gly	Asp	Ile	Ile	Leu	Gly	Leu	Pro	
				180					185					190			
10	gtc	tcc	gcc	cgc	agg	ggg	agg	gag	ata	cat	ctg	gga	ccg	gca	gac	agc	2425
	Val	Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	His	Leu	Gly	Pro	Ala	Asp	Ser	
				195				200					205				
15	ctt	gaa	ggg	cag	ggg	tgg	cga	ctc	ctc	gcg	cct	att	acg	gcc	tac	tcc	2473
	Leu	Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr	Ala	Tyr	Ser	
		210					215					220					
20	caa	cag	acg	cga	ggc	cta	ctt	ggc	tgc	atc	atc	act	agc	ctc	aca	ggc	2521
	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly	
	225					230					235					240	
25	cgg	gac	agg	aac	cag	gtc	gag	ggg	gag	gtc	caa	gtg	gtc	tcc	acc	gca	2569
	Arg	Asp	Arg	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser	Thr	Ala	
				245						250					255		
30	aca	caa	tct	ttc	ctg	gcg	acc	tgc	gtc	aat	ggc	gtg	tgt	tgg	act	gtc	2617
	Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp	Thr	Val	
				260				265						270			
35	tat	cat	ggt	gcc	ggc	tca	aag	acc	ctt	gcc	ggc	cca	aag	ggc	cca	atc	2665
	Tyr	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly	Pro	Ile	
			275				280					285					
40	acc	caa	atg	tac	acc	aat	gtg	gac	cag	gac	ctc	gtc	ggc	tgg	caa	gcg	2713
	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp	Gln	Ala	
		290				295						300					
45	ccc	ccc	ggg	gcg	cgt	tcc	ttg	aca	cca	tgc	acc	tgc	ggc	agc	tcg	gac	2761
	Pro	Pro	Gly	Ala	Arg	Ser	Leu	Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp	
	305				310					315						320	
50	ctt	tac	ttg	gtc	acg	agg	cat	gcc	gat	gtc	att	ccg	gtg	cgc	cgg	cgg	2809
	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg	Arg	Arg	
				325						330					335		
55	ggc	gac	ggc	agg	ggg	agc	cta	ctc	tcc	ccc	agg	ccc	gtc	tcc	tac	ttg	2857
	Gly	Asp	Gly	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser	Tyr	Leu	
				340					345					350			
60	aag	ggc	tct	tcg	ggc	ggt	cca	ctg	ctc	tgc	ccc	tcg	ggg	cac	gct	gtg	2905
	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His	Ala	Val	
			355				360					365					
65	ggc	atc	ttt	cgg	gct	gcc	gtg	tgc	acc	cga	ggg	gtt	gcg	aag	gcg	gtg	2953
	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys	Ala	Val	
		370				375					380						
70	gac	ttt	gta	ccc	gtc	gag	tct	atg	gga	acc	act	atg	cgg	tcc	ccg	gtc	3001
	Asp	Phe	Val	Pro	Val	Glu	Ser	Met	Gly	Thr	Thr	Met	Arg	Ser	Pro	Val	

	385		390		395		400	
5	ttc acg gac aac tcg tcc cct ccg gcc gta ccg cag aca ttc cag gtg							3049
	Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro Gln Thr Phe Gln Val							
		405			410		415	
10	gcc cat cta cac gcc cct act ggt agc ggc aag agc act aag gtg ccg							3097
	Ala His Leu His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val Pro							
		420			425		430	
15	gct gcg tat gca gcc caa ggg tat aag gtg ctt gtc ctg aac ccg tcc							3145
	Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro Ser							
		435			440		445	
20	gtc gcc gcc acc cta ggt ttc ggg gcg tat atg tct aag gca cat ggt							3193
	Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His Gly							
		450			455		460	
25	atc gac cct aac atc aga acc ggg gta agg acc atc acc acg ggt gcc							3241
	Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly Ala							
		465			470		475	480
30	ccc atc acg tac tcc acc tat ggc aag ttt ctt gcc gac ggt ggt tgc							3289
	Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys							
		485			490		495	
35	tct ggg ggc gcc tat gac atc ata ata tgt gat gag tgc cac tca act							3337
	Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser Thr							
		500			505		510	
40	gac tcg acc act atc ctg ggc atc ggc aca gtc ctg gac caa gcg gag							3385
	Asp Ser Thr Thr Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala Glu							
		515			520		525	
45	acg gct gga gcg cga ctc gtc gtg ctc gcc acc gct acg cct ccg gga							3433
	Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro Gly							
		530			535		540	
50	tcg gtc acc gtg cca cat cca aac atc gag gag gtg gct ctg tcc agc							3481
	Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser Ser							
		545			550		555	560
55	act gga gaa atc ccc ttt tat ggc aaa gcc atc ccc atc gag acc atc							3529
	Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Ile Glu Thr Ile							
		565			570		575	
60	aag ggg ggg agg cac ctc att ttc tgc cat tcc aag aag aaa tgt gat							3577
	Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys Asp							
		580			585		590	
65	gag ctc gcc gcg aag ctg tcc ggc ctc gga ctc aat gct gta gca tat							3625
	Glu Leu Ala Ala Lys Leu Ser Gly Leu Gly Leu Asn Ala Val Ala Tyr							
		595			600		605	
70	tac cgg ggc ctt gat gta tcc gtc ata cca act agc gga gac gtc att							3673
	Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val Ile							
		610			615		620	

	gtc gta gca acg gac gct cta atg acg ggc ttt acc ggc gat ttc gac	3721
	Val Val Ala Thr Asp Ala Leu Met Thr Gly Phe Thr Gly Asp Phe Asp	
	625 630 635 640	
5	tca gtg atc gac tgc aat aca tgt gtc acc cag aca gtc gac ttc agc	3769
	Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser	
	645 650 655	
10	ctg gac ccg acc ttc acc att gag acg acc gtg cca caa gac gcg	3817
	Leu Asp Pro Thr Phe Thr Ile Glu Thr Thr Val Pro Gln Asp Ala	
	660 665 670	
15	gtg tca cgc tcg cag cgg cga ggc agg act ggt agg ggc agg atg ggc	3865
	Val Ser Arg Ser Gln Arg Arg Gly Arg Thr Gly Arg Gly Arg Met Gly	
	675 680 685	
20	att tac agg ttt gtg act cca gga gaa cgg ccc tcg ggc atg ttc gat	3913
	Ile Tyr Arg Phe Val Thr Pro Gly Glu Arg Pro Ser Gly Met Phe Asp	
	690 695 700	
25	tcc tcg gtt ctg tgc gag tgc tat gac gcg ggc tgt gct tgg tac gag	3961
	Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu	
	705 710 715 720	
30	ctc acg ccc gcc gag acc tca gtt agg ttg cgg gct tac cta aac aca	4009
	Leu Thr Pro Ala Glu Thr Ser Val Arg Leu Arg Ala Tyr Leu Asn Thr	
	725 730 735	
35	cca ggg ttg ccc gtc tgc cag gac cat ctg gag ttc tgg gag agc gtc	4057
	Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Ser Val	
	740 745 750	
40	ttt aca ggc ctc acc cac ata gac gcc cat ttc ttg tcc cag act aag	4105
	Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys	
	755 760 765	
45	cag gca gga gac aac ttc ccc tac ctg gta gca tac cag gct acg gtg	4153
	Gln Ala Gly Asp Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val	
	770 775 780	
50	tgc gcc agg gct cag gct cca cct cca tcg tgg gac caa atg tgg aag	4201
	Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp Lys	
	785 790 795 800	
55	tgt ctc ata cgg cta aag cct acg ctg cac ggg cca acg ccc ctg ctg	4249
	Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu	
	805 810 815	
60	tat agg ctg gga gcc gtt caa aac gag gtt act acc aca cac ccc ata	4297
	Tyr Arg Leu Gly Ala Val Gln Asn Glu Val Thr Thr Thr His Pro Ile	
	820 825 830	
65	acc aaa tac atc atg gca tgc atg tcg gct gac ctg gag gtc gtc acg	4345
	Thr Lys Tyr Ile Met Ala Cys Met Ser Ala Asp Leu Glu Val Val Thr	
	835 840 845	

	agc acc tgg gtg ctg gta ggc gga gtc cta gca gct ctg gcc gcg tat	4393
	Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr	
	850 855 860	
5	tgc ctg aca aca ggc agc gtg gtc att gtg ggc agg atc atc ttg tcc	4441
	Cys Leu Thr Thr Gly Ser Val Val Ile Val Gly Arg Ile Ile Leu Ser	
	865 870 875 880	
10	gga aag ccg gcc atc att ccc gac agg gaa gtc ttt tac cgg gag ttc	4489
	Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Phe Tyr Arg Glu Phe	
	885 890 895	
15	gat gag atg gaa gag tgc gcc tca cac ctc cct tac atc gaa cag gga	4537
	Asp Glu Met Glu Glu Cys Ala Ser His Leu Pro Tyr Ile Glu Gln Gly	
	900 905 910	
20	atg cag ctc gcc gaa caa ttc aaa cag aag gca atc ggg ttg ctg caa	4585
	Met Gln Leu Ala Glu Gln Phe Lys Gln Lys Ala Ile Gly Leu Leu Gln	
	915 920 925	
25	aca gcc acc aag caa gcg gag gct gct gct ccc gtg gtg gaa tcc aag	4633
	Thr Ala Thr Lys Gln Ala Glu Ala Ala Ala Pro Val Val Glu Ser Lys	
	930 935 940	
30	tgg cgg acc ctc gaa gcc ttc tgg gcg aag cat atg tgg aat ttc atc	4681
	Trp Arg Thr Leu Glu Ala Phe Trp Ala Lys His Met Trp Asn Phe Ile	
	945 950 955 960	
35	agc ggg ata caa tat tta gca ggc ttg tcc act ctg cct ggc aac ccc	4729
	Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn Pro	
	965 970 975	
40	gcg ata gca tca ctg atg gca ttc aca gcc tct atc acc agc ccg ctc	4777
	Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ser Ile Thr Ser Pro Leu	
	980 985 990	
45	acc acc caa cat acc ctc ctg ttt aac atc ctg ggg gga tgg gtg gcc	4825
	Thr Thr Gln His Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Ala	
	995 1000 1005	
50	gcc caa ctt gct cct ccc agc gct gct tct gct ttc gta ggc gcc ggc	4873
	Ala Gln Leu Ala Pro Pro Ser Ala Ala Ser Ala Phe Val Gly Ala Gly	
	1010 1015 1020	
55	atc gct gga gcg gct gtt ggc agc ata ggc ctt ggg aag gtg ctt gtg	4921
	Ile Ala Gly Ala Ala Val Gly Ser Ile Gly Leu Gly Lys Val Leu Val	
	1025 1030 1035 1040	
60	gat att ttg gca ggt tat gga gca ggg gtg gca ggc gcg ctc gtg gcc	4969
	Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val Ala	
	1045 1050 1055	
65	ttt aag gtc atg agc ggc gag atg ccc tcc acc gag gac ctg gtt aac	5017
	Phe Lys Val Met Ser Gly Glu Met Pro Ser Thr Glu Asp Leu Val Asn	
	1060 1065 1070	
70	cta ctc cct gct atc ctc tcc cct ggc gcc cta gtc gtc ggg gtc gtg	5065

	Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val Val	
	1075 1080 1085	
5	tgc gca gcg ata ctg cgt cgg cac gtg ggc cca ggg gag ggg gct gtg Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala Val	5113
	1090 1095 1100	
10	cag tgg atg aac cgg ctg ata gcg ttc gct tcg cgg ggt aac cac gtc Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His Val	5161
	1105 1110 1115 1120	
15	tcc ccc acg cac tat gtg cct gag agc gac gct gca gca cgt gtc act Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val Thr	5209
	1125 1130 1135	
	cag atc ctc tct agt ctt acc atc act cag ctg ctg aag agg ctt cac Gln Ile Leu Ser Ser Leu Thr Ile Thr Gln Leu Leu Lys Arg Leu His	5257
	1140 1145 1150	
20	cag tgg atc aac gag gac tgc tcc acg cca tgc tcc ggc tcg tgg cta Gln Trp Ile Asn Glu Asp Cys Ser Thr Pro Cys Ser Gly Ser Trp Leu	5305
	1155 1160 1165	
25	aga gat gtt tgg gat tgg ata tgc acg gtg ttg act gat ttc aag acc Arg Asp Val Trp Asp Trp Ile Cys Thr Val Leu Thr Asp Phe Lys Thr	5353
	1170 1175 1180	
30	tgg ctc cag tcc aag ctc ctg ccg cga ttg ccg gga gtc ccc ttc ttc Trp Leu Gln Ser Lys Leu Leu Pro Arg Leu Pro Gly Val Pro Phe Phe	5401
	1185 1190 1195 1200	
35	tca tgt caa cgt ggg tac aag gga gtc tgg cgg ggc gac ggc atc atg Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile Met	5449
	1205 1210 1215	
	caa acc acc tgc cca tgt gga gca cag atc acc gga cat gtg aaa aac Gln Thr Thr Cys Pro Cys Gly Ala Gln Ile Thr Gly His Val Lys Asn	5497
	1220 1225 1230	
40	cgt tcc atg agg atc gtg ggg cct agg acc tgt agt aac acg tgg cat Arg Ser Met Arg Ile Val Gly Pro Arg Thr Cys Ser Asn Thr Trp His	5545
	1235 1240 1245	
45	gga aca ttc ccc att aac gcg tac acc acg ggc ccc tgc acg ccc tcc Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro Ser	5593
	1250 1255 1260	
50	ccg gcg cca aat tat tct agg gcg ctg tgg cgg gtg gct gct gag gag Pro Ala Pro Asn Tyr Ser Arg Ala Leu Trp Arg Val Ala Ala Glu Glu	5641
	1265 1270 1275 1280	
55	tac gtg gag gtt acg cgg gtg ggg gat ttc cac tac gtg acg ggc atg Tyr Val Glu Val Thr Arg Val Gly Asp Phe His Tyr Val Thr Gly Met	5689
	1285 1290 1295	
	acc act gac aac gta aag tgc ccg tgt cag gtt ccg gcc ccc gaa ttc Thr Thr Asp Asn Val Lys Cys Pro Cys Gln Val Pro Ala Pro Glu Phe	5737

	1300	1305	1310	
5	ttc aca gaa gtg gat ggg gtg cgg ttg cac agg tac gct cca gcg tgc Phe Thr Glu Val Asp Gly Val Arg Leu His Arg Tyr Ala Pro Ala Cys 1315 1320 1325	5785		
10	aaa ccc ctc cta cgg gag gag gtc aca ttc ctg gtc ggg ctc aat caa Lys Pro Leu Leu Arg Glu Glu Val Thr Phe Leu Val Gly Leu Asn Gln 1330 1335 1340	5833		
15	tac ctg gtt ggg tca cag ctc cca tgc gag ccc gaa ccg gac gta gca Tyr Leu Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val Ala 1345 1350 1355 1360	5881		
20	gtg ctc act tcc atg ctc acc gac ccc tcc cac att acg gcg gag acg Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu Thr 1365 1370 1375	5929		
25	gct aag cgt agg ctg gcc agg gga tct ccc ccc tcc ttg gcc agc tca Ala Lys Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Leu Ala Ser Ser 1380 1385 1390	5977		
30	tca gct agc cag ctg tct gcg cct tcc ttg aag gca aca tgc act acc Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr Thr 1395 1400 1405	6025		
35	cgt cat gac tcc ccg gac gct gac ctc atc gag gcc aac ctc ctg tgg Arg His Asp Ser Pro Asp Ala Asp Leu Ile Glu Ala Asn Leu Leu Trp 1410 1415 1420	6073		
40	cgg cag gag atg ggc ggg aac atc acc cgc gtg gag tca gaa aat aag Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn Lys 1425 1430 1435 1440	6121		
45	gta gta att ttg gac tct ttc gag ccg ctc caa gcg gag gag gat gag Val Val Ile Leu Asp Ser Phe Glu Pro Leu Gln Ala Glu Glu Asp Glu 1445 1450 1455	6169		
50	agg gaa gta tcc gtt ccg gcg gag atc ctg ccg agg tcc agg aaa ttc Arg Glu Val Ser Val Pro Ala Glu Ile Leu Arg Arg Ser Arg Lys Phe 1460 1465 1470	6217		
55	cct cga gcg atg ccc ata tgg gca cgc ccg gat tac aac cct cca ctg Pro Arg Ala Met Pro Ile Trp Ala Arg Pro Asp Tyr Asn Pro Pro Leu 1475 1480 1485	6265		
60	tta gag tcc tgg aag gac ccg gac tac gtc cct cca gtg gta cac ggg Leu Glu Ser Trp Lys Asp Pro Asp Tyr Val Pro Pro Val Val His Gly 1490 1495 1500	6313		
65	tgt cca ctg ccg cct gcc aag gcc cct ccg ata cca cct cca cgg agg Cys Pro Leu Pro Pro Ala Lys Ala Pro Pro Ile Pro Pro Pro Arg Arg 1505 1510 1515 1520	6361		
70	aag agg acg gtt gtc ctg tca gaa tct acc gtg tct tct gcc ttg gcg Lys Arg Thr Val Leu Ser Glu Ser Thr Val Ser Ser Ala Leu Ala 1525 1530 1535	6409		

	gag ctc gcc aca aag acc ttc ggc agc tcc gaa tcg tcg gcc gtc gac	6457
	Glu Leu Ala Thr Lys Thr Phe Gly Ser Ser Glu Ser Ser Ala Val Asp	
	1540 1545 1550	
5	agc ggc acg gca acg gcc tct cct gac cag ccc tcc gac gac ggc gac	6505
	Ser Gly Thr Ala Thr Ala Ser Pro Asp Gln Pro Ser Asp Asp Gly Asp	
	1555 1560 1565	
10	gcg gga tcc gac gtt gag tcg tac tcc tcc atg ccc ccc ctt gag ggg	6553
	Ala Gly Ser Asp Val Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu Gly	
	1570 1575 1580	
15	gag ccg ggg gat ccc gat ctc agc gac ggg cct tgg tct acc gta agc	6601
	Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Pro Trp Ser Thr Val Ser	
	1585 1590 1595 1600	
20	gag gag gct agt gag gac gtc gtc tgc tgc tcg atg tcc tac aca tgg	6649
	Glu Glu Ala Ser Glu Asp Val Val Cys Cys Ser Met Ser Tyr Thr Trp	
	1605 1610 1615	
25	aca ggc gcc ctg atc acg cca tgc gct gcg gag gaa acc aag ctg ccc	6697
	Thr Gly Ala Leu Ile Thr Pro Cys Ala Ala Glu Glu Thr Lys Leu Pro	
	1620 1625 1630	
30	atc aat gca ctg agc aac tct ttg ctc cgt cac cac aac ttg gtc tat	6745
	Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu Val Tyr	
	1635 1640 1645	
35	gct aca aca tct cgc agc gca agc ctg cgg cag aag aag gtc acc ttt	6793
	Ala Thr Thr Ser Arg Ser Ala Ser Leu Arg Gln Lys Lys Val Thr Phe	
	1650 1655 1660	
40	gac aga ctg cag gtc ctg gac gac cac tac cgg gac gtg ctc aag gag	6841
	Asp Arg Leu Gln Val Leu Asp Asp His Tyr Arg Asp Val Leu Lys Glu	
	1665 1670 1675 1680	
45	atg aag gcg aag gcg tcc aca gtt aag gct aaa ctt cta tcc gtg gag	6889
	Met Lys Ala Lys Ala Ser Thr Val Lys Ala Lys Leu Leu Ser Val Glu	
	1685 1690 1695	
50	gaa gcc tgt aag ctg acg ccc cca cat tcg gcc aga tct aaa ttt ggc	6937
	Glu Ala Cys Lys Leu Thr Pro Pro His Ser Ala Arg Ser Lys Phe Gly	
	1700 1705 1710	
55	tat ggg gca aag gac gtc cgg aac cta tcc agc aag gcc gtt aac cac	6985
	Tyr Gly Ala Lys Asp Val Arg Asn Leu Ser Ser Lys Ala Val Asn His	
	1715 1720 1725	
50	atc cgc tcc gtg tgg aag gac ttg ctg gaa gac act gag aca cca att	7033
	Ile Arg Ser Val Trp Lys Asp Leu Leu Glu Asp Thr Glu Thr Pro Ile	
	1730 1735 1740	
55	gac acc acc atc atg gca aaa aat gag gtt ttc tgc gtc caa cca gag	7081
	Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln Pro Glu	
	1745 1750 1755 1760	

	aag ggg ggc cgc aag cca gct cgc ctt atc gta ttc cca gat ttg ggg	7129
	Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp Leu Gly	
	1765 1770 1775	
5	gtt cgt gtg tgc gag aaa atg gcc ctt tac gat gtg gtc tcc acc ctc	7177
	Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Ser Thr Leu	
	1780 1785 1790	
10	cct cag gcc gtg atg ggc tct tca tac gga ttc caa tac tct cct gga	7225
	Pro Gln Ala Val Met Gly Ser Tyr Gly Phe Gln Tyr Ser Pro Gly	
	1795 1800 1805	
15	cag cgg gtc gag ttc ctg gtg aat gcc tgg aaa gcg aag aaa tgc cct	7273
	Gln Arg Val Glu Phe Leu Val Asn Ala Trp Lys Ala Lys Lys Cys Pro	
	1810 1815 1820	
20	atg ggc ttc gca tat gac acc cgc tgt ttt gac tca acg gtc act gag	7321
	Met Gly Phe Ala Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val Thr Glu	
	1825 1830 1835 1840	
25	aat gac atc cgt gtt gag gag tca atc tac caa tgt tgt gac ttg gcc	7369
	Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln Cys Cys Asp Leu Ala	
	1845 1850 1855	
30	ccc gaa gcc aga cag gcc ata agg tcg ctc aca gag cgg ctt tac atc	7417
	Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr Glu Arg Leu Tyr Ile	
	1860 1865 1870	
35	ggg ggc ccc ctg act aat tct aaa ggg cag aac tgc ggc tat cgc cgg	7465
	Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn Cys Gly Tyr Arg Arg	
	1875 1880 1885	
40	tgc cgc gcg agc ggt gta ctg acg acc agc tgc ggt aat acc ctc aca	7513
	Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr Leu Thr	
	1890 1895 1900	
45	tgt tac ttg aag gcc gct gcg gcc tgt cga gct gcg aag ctc cag gac	7561
	Cys Tyr Leu Lys Ala Ala Ala Cys Arg Ala Ala Lys Leu Gln Asp	
	1905 1910 1915 1920	
50	tgc acg atg ctc gta tgc gga gac gac ctt gtc gtt atc tgt gaa agc	7609
	Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys Glu Ser	
	1925 1930 1935	
55	gcg ggg acc caa gag gac gag gcg agc cta cgg gcc ttc acg gag gct	7657
	Ala Gly Thr Gln Glu Asp Glu Ala Ser Leu Arg Ala Phe Thr Glu Ala	
	1940 1945 1950	
60	atg act aga tac tct gcc ccc cct ggg gac ccg ccc aaa cca gaa tac	7705
	Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Lys Pro Glu Tyr	
	1955 1960 1965	
65	gac ttg gag ttg ata aca tca tgc tcc tcc aat gtg tca gtc gcg cac	7753
	Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val Ala His	
	1970 1975 1980	
70	gat gca tct ggc aaa agg gtg tac tat ctc acc cgt gac ccc acc acc	7801

	Asp	Ala	Ser	Gly	Lys	Arg	Val	Tyr	Tyr	Leu	Thr	Arg	Asp	Pro	Thr	Thr	
	1985					1990				1995						2000	
5	ccc	ctt	gcg	cgg	gct	gcg	tgg	gag	aca	gct	aga	cac	act	cca	gtc	aat	7849
	Pro	Leu	Ala	Arg	Ala	Ala	Trp	Glu	Thr	Ala	Arg	His	Thr	Pro	Val	Asn	
					2005					2010					2015		
10	tcc	tgg	cta	ggc	aac	atc	atc	atg	tat	gcg	ccc	acc	ttg	tgg	gca	agg	7897
	Ser	Trp	Leu	Gly	Asn	Ile	Ile	Met	Tyr	Ala	Pro	Thr	Leu	Trp	Ala	Arg	
				2020					2025					2030			
15	atg	atc	ctg	atg	act	cat	ttc	ttc	tcc	atc	ctt	cta	gct	cag	gaa	caa	7945
	Met	Ile	Leu	Met	Thr	His	Phe	Phe	Ser	Ile	Leu	Leu	Ala	Gln	Glu	Gln	
			2035					2040					2045				
	ctt	gaa	aaa	gcc	cta	gat	tgt	cag	atc	tac	ggg	gcc	tgt	tac	tcc	att	7993
	Leu	Glu	Lys	Ala	Leu	Asp	Cys	Gln	Ile	Tyr	Gly	Ala	Cys	Tyr	Ser	Ile	
		2050					2055					2060					
20	gag	cca	ctt	gac	cta	cct	cag	atc	att	caa	cga	ctc	cac	ggc	ctt	agc	8041
	Glu	Pro	Leu	Asp	Leu	Pro	Gln	Ile	Ile	Gln	Arg	Leu	His	Gly	Leu	Ser	
		2065				2070					2075					2080	
25	gca	ttt	tca	ctc	cat	agt	tac	tct	cca	ggt	gag	atc	aat	agg	gtg	gct	8089
	Ala	Phe	Ser	Leu	His	Ser	Tyr	Ser	Pro	Gly	Glu	Ile	Asn	Arg	Val	Ala	
					2085					2090					2095		
30	tca	tgc	ctc	agg	aaa	ctt	ggg	gta	ccg	ccc	ttg	cga	gtc	tgg	aga	cat	8137
	Ser	Cys	Leu	Arg	Lys	Leu	Gly	Val	Pro	Pro	Leu	Arg	Val	Trp	Arg	His	
				2100					2105					2110			
35	cgg	gcc	aga	agt	gtc	cgc	gct	agg	cta	ctg	tcc	cag	ggg	ggg	agg	gct	8185
	Arg	Ala	Arg	Ser	Val	Arg	Ala	Arg	Leu	Leu	Ser	Gln	Gly	Gly	Arg	Ala	
			2115					2120					2125				
	gcc	act	tgt	ggc	aag	tac	ctc	ttc	aac	tgg	gca	gta	agg	acc	aag	ctc	8233
	Ala	Thr	Cys	Gly	Lys	Tyr	Leu	Phe	Asn	Trp	Ala	Val	Arg	Thr	Lys	Leu	
		2130					2135					2140					
40	aaa	ctc	act	cca	atc	ccg	gct	gcg	tcc	cag	ttg	gat	tta	tcc	agc	tgg	8281
	Lys	Leu	Thr	Pro	Ile	Pro	Ala	Ala	Ser	Gln	Leu	Asp	Leu	Ser	Ser	Trp	
		2145				2150					2155					2160	
45	ttc	gtt	gct	ggt	tac	agc	ggg	gga	gac	ata	tat	cac	agc	ctg	tct	cgt	8329
	Phe	Val	Ala	Gly	Tyr	Ser	Gly	Gly	Asp	Ile	Tyr	His	Ser	Leu	Ser	Arg	
					2165					2170					2175		
50	gcc	cga	ccc	cgc	tgg	ttc	atg	tgg	tgc	cta	ctc	cta	ctt	tct	gta	ggg	8377
	Ala	Arg	Pro	Arg	Trp	Phe	Met	Trp	Cys	Leu	Leu	Leu	Leu	Ser	Val	Gly	
				2180													

ccatcttagc cctagtcacg gctagctgtg aaaggtccgt gagccgcttg actgcagaga 8607
gtgctgatac tggcctctct gcagatcaag t 8638

5 <210> 7
<211> 8638
<212> DNA
<213> HCV

10 <220>
<221> CDS
<222> (1802)...(8407)

<400> 7
15 gccagccccc gattgggggc gacaactccac catagatcac tcccctgtga ggaactactg 60
tcttcacgca gaaagcgtct agccatggcg ttagtatgag tgtcgtgcag cctccaggac 120
ccccctccc gggagagcca tagtggctctg cggaaccggt gagtacaccg gaattgccag 180
gacgaccggg tcctttcttg gatcaacccg ctcaatgcct ggagatttgg gcgtgcccc 240
gcgagactgc tagccgagta gtgttggtgc gcgaaaggcc ttgtggtact gcctgatagg 300
gtgcttgcca gtgccccggg aggtctcgta gaccgtgcac catgagcacg aatcctaaac 360
20 ctcaaagaaa aaccaaaggg cgcgccatga ttgaacaaga tggattgcac gcaggttctc 420
cggccgcttg ggtggagagg ctattcggct atgactgggc acaacagaca atcggctgct 480
ctgatgccgc cgtgttcccg ctgtcagcgc agggcgcccc gggtcttttt gtcaagaccg 540
acctgtccgg tgccctgaat gaactgcagg acgaggcagc gcggctatcg tggctggcca 600
cgacgggcgt tccttgcgca gctgtgctcg acgttgctac tgaagcggga agggactggc 660
25 tgctattggg cgaagtgccg gggcaggatc tcctgtcatc tcaccttgct cctgccgaga 720
aagtatccat catggctgat gcaatgcggc ggctgcatac gcttgatccg gctacctgcc 780
cattcgacca ccaagcgaaa catcgcatcg agcgagcacg tactcggatg gaagccggtc 840
ttgtcgatca ggatgatctg gacgaagagc atcaggggct cgcgccagcc gaactgttcg 900
ccaggctcaa ggcgcgcgatg cccgacggcg aggatctcgt cgtgacccat ggcgatgcct 960
30 gcttgccgaa tatcatggtg gaaaatggcc gcttttcttg attcatcgac tgtggccggc 1020
tgggtgtggc ggaccgctat caggacatag cgttggtac ccgtgatatt gctgaagagc 1080
ttggcggcga atgggctgac cgcttcctcg tgctttacgg tatcgccgt cccgattcgc 1140
agcgcacgcg cttctatcgc cttcttgacg agttcttctg agttcgcgcc cagatgttaa 1200
cagaccacaa cggtttccct ctagcgggat caattccgcc ccccccccta acgttactgg 1260
35 ccgaagccgc ttggaataag gccgggtgtg gtttgtctat atgttatatt ccaccatatt 1320
gccgtctttt ggcaatgtga gggcccggaa acctggccct gtcttcttga cgagcattcc 1380
taggggtctt tcccctctcg ccaaaggaat gcaaggctctg ttgaatgtcg tgaaggaagc 1440
agttcctctg gaagcttctt gaagacaaac aacgtctgta gcgacccttt gcaggcagcg 1500
gaacccccca cctggcgaca ggtgcctctg cggccaaaag ccacgtgtat aagatacacc 1560
40 tgcaaaggcg gcacaacccc agtgccacgt tgtgagttgg atagttgtgg aaagagtcaa 1620
atggctctcc tcaagcgtat tcaacaaggg gctgaaggat gccagaagg taccctattg 1680
tatgggatct gatctggggc ctcggtgcac atgctttaca tgtgtttagt cgagggttaa 1740
aaacgtctag gcccccgaa ccacggggac gtggttttcc ttgaaaaaac acgataatac 1800
c atg gac cgg gag atg gca gca tcg tgc gga ggc gcg gtt ttc gta ggt 1849
45 Met Asp Arg Glu Met Ala Ala Ser Cys Gly Gly Ala Val Phe Val Gly
1 5 10 15

50 ctg ata ctc ttg acc ttg tca ccg cac tat aag ctg ttc ctc gct agg 1897
Leu Ile Leu Leu Thr Leu Ser Pro His Tyr Lys Leu Phe Leu Ala Arg
20 25 30

ctc ata tgg tgg tta caa tat ttt atc acc agg gcc gag gca cac ttg 1945
Leu Ile Trp Trp Leu Gln Tyr Phe Ile Thr Arg Ala Glu Ala His Leu
35 40 45

55 caa gtg tgg atc ccc ccc ctc aac gtt cgg ggg ggc cgc gat gcc gtc 1993
Gln Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Val

	50	55	60	
5	atc ctc ctc acg tgc gcg atc cac cca gag cta atc ttt acc atc acc Ile Leu Leu Thr Cys Ala Ile His Pro Glu Leu Ile Phe Thr Ile Thr 65 70 75 80	2041		
10	aaa atc ttg ctc gcc ata ctc ggt cca ctc atg gtg ctc cag gct ggt Lys Ile Leu Leu Ala Ile Leu Gly Pro Leu Met Val Leu Gln Ala Gly 85 90 95	2089		
15	ata acc aaa gtg ccg tac ttc gtg cgc gca cac ggg ctc att cgt gca Ile Thr Lys Val Pro Tyr Phe Val Arg Ala His Gly Leu Ile Arg Ala 100 105 110	2137		
20	tgc atg ctg gtg cgg aag gtt gct ggg ggt cat tat gtc caa atg gct Cys Met Leu Val Arg Lys Val Ala Gly Gly His Tyr Val Gln Met Ala 115 120 125	2185		
25	ctc atg aag ttg gcc gca ctg aca ggt acg tac gtt tat gac cat ctc Leu Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu 130 135 140	2233		
30	acc cca ctg cgg gac tgg gcc cac gcg ggc cta cga gac ctt gcg gtg Thr Pro Leu Arg Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val 145 150 155 160	2281		
35	gca gtt gag ccc gtc gtc ttc tct gat atg gag acc aag gtt atc acc Ala Val Glu Pro Val Val Phe Ser Asp Met Glu Thr Lys Val Ile Thr 165 170 175	2329		
40	tgg ggg gca gac acc gcg gcg tgt ggg gac atc atc ttg ggc ctg ccc Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Leu Gly Leu Pro 180 185 190	2377		
45	gtc tcc gcc cgc agg ggg agg gag ata cat ctg gga ccg gca gac agc Val Ser Ala Arg Arg Gly Arg Glu Ile His Leu Gly Pro Ala Asp Ser 195 200 205	2425		
50	ctt gaa ggg cag ggg tgg cga ctc ctc gcg cct att acg gcc tac tcc Leu Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser 210 215 220	2473		
55	caa cag acg cga ggc cta ctt ggc tgc atc atc acc agc ctc aca ggc Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly 225 230 235 240	2521		
60	cgg gac agg aac cag gtc gag ggg gag gtc caa gtg gtc tcc acc gca Arg Asp Arg Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala 245 250 255	2569		
65	aca caa tct ttc ctg gcg acc tgc gtc aat ggc gtg tgt tgg act gtc Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val 260 265 270	2617		
70	tat cat ggt gcc ggc tca aag acc ctt gcc ggc cca aag ggc cca atc Tyr His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile 275 280 285	2665		

	acc caa atg tac acc aat gtg gac cag gac ctc gtc ggc tgg caa gcg	2713
	Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala	
	290 295 300	
5	ccc ccc ggg gcg cgt tcc ttg aca cca tgc acc tgc ggc agc tcg gac	2761
	Pro Pro Gly Ala Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp	
	305 310 315 320	
10	ctt tac ttg gtc acg aag cat gcc gat gtc att ccg gtg cgc cgg cgg	2809
	Leu Tyr Leu Val Thr Lys His Ala Asp Val Ile Pro Val Arg Arg Arg	
	325 330 335	
15	ggc gac agc agg ggg agc cta ctc tcc ccc cgg ccc gtc tcc tac ttg	2857
	Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu	
	340 345 350	
20	aag ggc tct tcg ggc ggt cca ctg ctc tgc ccc tcg ggg cac gct gtg	2905
	Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val	
	355 360 365	
25	ggc atc ttt cgg gct gcc gtg tgc acc cga ggg gtt gcg aag gcg gtg	2953
	Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val	
	370 375 380	
30	gac ttt gta ccc gtc gag tct atg gaa acc act atg cgg tcc ccg gtc	3001
	Asp Phe Val Pro Val Glu Ser Met Glu Thr Thr Met Arg Ser Pro Val	
	385 390 395 400	
35	ttc acg gac aac tcg tcc cct ccg gcc gta ccg cag aca ttc cag gtg	3049
	Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro Gln Thr Phe Gln Val	
	405 410 415	
40	gcc cat cta cac gcc cct act ggt agc ggc aag agc act aag gtg ccg	3097
	Ala His Leu His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val Pro	
	420 425 430	
45	gct gcg tat gca gcc caa ggg tat aag gtg ctt gtc ctg aac ccg tcc	3145
	Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro Ser	
	435 440 445	
50	gtc gcc gcc acc cta ggt ttc ggg gcg tat atg tct aag gca cat ggt	3193
	Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His Gly	
	450 455 460	
55	atc gac cct aac atc aga acc ggg gta agg acc atc acc acg ggt gcc	3241
	Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly Ala	
	465 470 475 480	
60	ccc atc acg tac tcc acc tat ggc aag ttt ctt gcc gac ggt ggt tgc	3289
	Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys	
	485 490 495	
65	tct ggg ggc gcc tat gac atc ata ata tgt gat gag tgc cac tca act	3337
	Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser Thr	
	500 505 510	

	gac tcg acc act atc ctg ggc atc ggc aca gtc ctg gac caa gcg gag	3385
	Asp Ser Thr Thr Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala Glu	
	515 520 525	
5	acg gct gga gcg cga ctc gtc gtg ctc gcc acc gct acg cct ccg gga	3433
	Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro Gly	
	530 535 540	
10	tcg gtc acc gtg cca cat cca aac atc gag gag gtg gct ctg tcc agc	3481
	Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser Ser	
	545 550 555 560	
15	act gga gaa atc ccc ttt tat ggc aaa gcc atc ccc atc gag acc atc	3529
	Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Ile Glu Thr Ile	
	565 570 575	
20	aag ggg ggg agg cac ctc att ttc tgc cat tcc aag aag aaa tgc gat	3577
	Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys Asp	
	580 585 590	
25	gag ctc gcc gcg aag ctg tcc ggc ctc gga ctc aat gct gta gca tat	3625
	Glu Leu Ala Ala Lys Leu Ser Gly Leu Gly Leu Asn Ala Val Ala Tyr	
	595 600 605	
30	tac cgg ggc ctt gat gta tcc gtc ata cca act agc gga gac gtc att	3673
	Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val Ile	
	610 615 620	
35	gtc gta gca acg gac gct cta atg acg ggc ttt acc ggc gat ttc gac	3721
	Val Val Ala Thr Asp Ala Leu Met Thr Gly Phe Thr Gly Asp Phe Asp	
	625 630 635 640	
40	tca gtg atc gac tgc aat aca tgt gtc acc cag aca gtc gac ttc agc	3769
	Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser	
	645 650 655	
45	ctg gac ccg acc ttc acc att gag acg acg acc gtg cca caa gac gcg	3817
	Leu Asp Pro Thr Phe Thr Ile Glu Thr Thr Thr Val Pro Gln Asp Ala	
	660 665 670	
50	gtg tca cgc tcg cag cgg cga ggc agg act ggt agg ggc agg atg ggc	3865
	Val Ser Arg Ser Gln Arg Arg Gly Arg Thr Gly Arg Gly Arg Met Gly	
	675 680 685	
55	att tac agg ttt gtg act cca gga gaa cgg ccc tcg ggc atg ttc gat	3913
	Ile Tyr Arg Phe Val Thr Pro Gly Glu Arg Pro Ser Gly Met Phe Asp	
	690 695 700	
60	tcc tcg gtt ctg tgc gag tgc tat gac gcg ggc tgt gct tgg tac gag	3961
	Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu	
	705 710 715 720	
65	ctc acg ccc gcc gag acc tca gtt agg ttg cgg gct tac cta aac aca	4009
	Leu Thr Pro Ala Glu Thr Ser Val Arg Leu Arg Ala Tyr Leu Asn Thr	
	725 730 735	
70	cca ggg ttg ccc gtc tgc cag gac cat ctg gag ttc tgg gag ggc gtc	4057

	Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly Val	
	740 745 750	
5	ttt aca ggc ctc acc cac ata gac gcc cat ttc ttg tcc cag act aag Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys 755 760 765	4105
10	cag gca gga gac aac ttc ccc tac ctg gta gca tac cag gct acg gtg Gln Ala Gly Asp Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val 770 775 780	4153
15	tgc gcc agg gct cag gct cca cct cca tcg tgg gac caa atg tgg aag Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp Lys 785 790 795 800	4201
	tgt ctc ata cgg cta aag cct acg ctg cac ggg cca acg ccc ctg ctg Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu 805 810 815	4249
20	tat agg ctg gga gcc gtt caa aac gag gtt act acc aca cac ccc ata Tyr Arg Leu Gly Ala Val Gln Asn Glu Val Thr Thr Thr His Pro Ile 820 825 830	4297
25	acc aaa tac atc atg gca tgc atg tcg gct gac ctg gag gtc gtc acg Thr Lys Tyr Ile Met Ala Cys Met Ser Ala Asp Leu Glu Val Val Thr 835 840 845	4345
30	agc acc tgg gtg ctg gta ggc gga gtc cta gca gct ctg gct gcg tat Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr 850 855 860	4393
35	tgc ctg aca aca ggc agc gtg gtc att gtg ggc agg atc atc ttg tcc Cys Leu Thr Thr Gly Ser Val Val Ile Val Gly Arg Ile Ile Leu Ser 865 870 875 880	4441
	gga agg ccg gcc atc att ccc gac agg gaa gtc ctt tac cgg gag ttc Gly Arg Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe 885 890 895	4489
40	gat gag atg gaa gag tgt gcc tca cac ctc cct tac atc gaa cag gga Asp Glu Met Glu Glu Cys Ala Ser His Leu Pro Tyr Ile Glu Gln Gly 900 905 910	4537
45	atg cag ctc gcc gaa caa ttc aaa cag aag gca atc ggg ttg ctg caa Met Gln Leu Ala Glu Gln Phe Lys Gln Lys Ala Ile Gly Leu Leu Gln 915 920 925	4585
50	aca gcc acc aag caa gcg gag gct gct gct ccc gtg gtg gaa tcc aag Thr Ala Thr Lys Gln Ala Glu Ala Ala Ala Pro Val Val Glu Ser Lys 930 935 940	4633
55	tgg cgg acc ctc gaa gcc ttc tgg gcg aag cat atg tgg aat ttc atc Trp Arg Thr Leu Glu Ala Phe Trp Ala Lys His Met Trp Asn Phe Ile 945 950 955 960	4681
	agc ggg ata caa tat tta gca ggc ttg tcc act ctg cct ggc aac ccc Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn Pro	4729

	965	970	975	
5	gcg ata gca tca ctg atg gca ttc aca gcc tct atc acc agc ccg ctc Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ser Ile Thr Ser Pro Leu 980 985 990	4777		
10	acc acc caa cat acc ctc ctg ttt aac atc ctg ggg gga tgg gtg gcc Thr Thr Gln His Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Ala 995 1000 1005	4825		
15	gcc caa ctt gct cct ccc agc gct gct tcc gct ttc gta ggc gcc ggc Ala Gln Leu Ala Pro Pro Ser Ala Ala Ser Ala Phe Val Gly Ala Gly 1010 1015 1020	4873		
20	atc gct gga gcg gct gtt ggc agc ata ggc ctt ggg aag gtg ctt gtg Ile Ala Gly Ala Ala Val Gly Ser Ile Gly Leu Gly Lys Val Leu Val 1025 1030 1035 1040	4921		
25	gat att ttg gca ggt tat gga gca ggg gtg gca ggc gcg ctc gtg gcc Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val Ala 1045 1050 1055	4969		
30	ttt aag gtc atg agc ggc gag atg ccc tcc acc gag gac ctg gtt aac Phe Lys Val Met Ser Gly Glu Met Pro Ser Thr Glu Asp Leu Val Asn 1060 1065 1070	5017		
35	cta ctc cct gct atc ctc tcc cct ggc gcc cta gtc gtc ggg gtc gtg Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val Val 1075 1080 1085	5065		
40	tgc gca gcg ata ctg cgt cgg cac gtg ggc cca ggg gag ggg gct gtg Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala Val 1090 1095 1100	5113		
45	cag tgg atg aac cgg ctg ata gcg ttc gct tcg cgg ggt aac cac gtc Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His Val 1105 1110 1115 1120	5161		
50	tcc ccc acg cac tat gtg cct gag agc gac gct gca gca cgt gtc act Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val Thr 1125 1130 1135	5209		
55	cag atc ctc tct agt ctt acc atc act cag ctg ctg aag agg ctt cac Gln Ile Leu Ser Ser Leu Thr Ile Thr Gln Leu Leu Lys Arg Leu His 1140 1145 1150	5257		
60	cag tgg atc aac gag gac tgc tcc acg cca tgc tcc ggc tcg tgg cta Gln Trp Ile Asn Glu Asp Cys Ser Thr Pro Cys Ser Gly Ser Trp Leu 1155 1160 1165	5305		
65	aga gat gtt tgg gat tgg ata tgc acg gtg ttg act gat ttc aag gcc Arg Asp Val Trp Asp Trp Ile Cys Thr Val Leu Thr Asp Phe Lys Ala 1170 1175 1180	5353		
70	tgg ctc cag tcc aag ctc ctg ccg cga ttg ccg gga gtc ccc ttc ttc Trp Leu Gln Ser Lys Leu Leu Pro Arg Leu Pro Gly Val Pro Phe Phe 1185 1190 1195 1200	5401		

	tca tgt caa cgt ggg tac aag gga gtc tgg cgg ggc gac ggc atc atg	5449
	Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile Met	
	1205 1210 1215	
5	caa acc acc tgc cca tgt gga gca cag atc acc gga cat gtg aaa aac	5497
	Gln Thr Thr Cys Pro Cys Gly Ala Gln Ile Thr Gly His Val Lys Asn	
	1220 1225 1230	
10	tgt tcc atg agg atc gtg ggg cct agg acc tgt agt aac acg tgg cat	5545
	Cys Ser Met Arg Ile Val Gly Pro Arg Thr Cys Ser Asn Thr Trp His	
	1235 1240 1245	
15	gga aca ttc ccc att aac gcg tac acc acg ggc ccc tgc acg ccc tcc	5593
	Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro Ser	
	1250 1255 1260	
20	ccg gcg cca aat tat tct agg gcg ctg tgg cgg gtg gct gct gag gag	5641
	Pro Ala Pro Asn Tyr Ser Arg Ala Leu Trp Arg Val Ala Ala Glu Glu	
	1265 1270 1275 1280	
25	tac gtg gag gtt acg cga gtg ggg gat ttc cac tac gtg acg ggc atg	5689
	Tyr Val Glu Val Thr Arg Val Gly Asp Phe His Tyr Val Thr Gly Met	
	1285 1290 1295	
30	acc act gac aac gta aag tgc ccg tgt cag gtt ccg gcc ccc gaa ttc	5737
	Thr Thr Asp Asn Val Lys Cys Pro Cys Gln Val Pro Ala Pro Glu Phe	
	1300 1305 1310	
35	ttc aca gaa gtg gat ggg gtg cgg ttg cac agg tac gct cca gcg tgc	5785
	Phe Thr Glu Val Asp Gly Val Arg Leu His Arg Tyr Ala Pro Ala Cys	
	1315 1320 1325	
40	aaa ccc ctc cta cgg gag gag gtc aca ttc ctg gtc ggg ctc aat caa	5833
	Lys Pro Leu Leu Arg Glu Glu Val Thr Phe Leu Val Gly Leu Asn Gln	
	1330 1335 1340	
45	tac ccg gtt ggg tca cag ctc cca tgc gag ccc gaa ctg gac gta gca	5881
	Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Leu Asp Val Ala	
	1345 1350 1355 1360	
50	gtg ctc act tcc atg ctc acc gac ccc tcc cac att acg gcg gag acg	5929
	Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu Thr	
	1365 1370 1375	
55	gct aag cgt agg ctg gcc agg gga tct ccc ccc tcc ttg gcc agc tca	5977
	Ala Lys Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Leu Ala Ser Ser	
	1380 1385 1390	
60	tca gct agc cag ctg tct gcg cct tcc ttg aag gca aca tgc act acc	6025
	Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr Thr	
	1395 1400 1405	
65	cgt cat gac tcc ccg gac gct gac ctc atc gag gcc aac ctc ctg tgg	6073
	Arg His Asp Ser Pro Asp Ala Asp Leu Ile Glu Ala Asn Leu Leu Trp	
	1410 1415 1420	

	cg	g	g	a	g	g	g	a	a	c	c	g	g	t	c	a	g	a	a		6121	
	Arg	Gln	Glu	Met	Gly	Gly	Asn	Ile	Thr	Arg	Val	Glu	Ser	Glu	Asn	Lys						
	1425					1430					1435						1440					
5	g	t	a	a	t	t	g	a	c	t	c	t	t	c	g	a	g	g	a	g		6169
	Val	Val	Ile	Leu	Asp	Ser	Phe	Glu	Pro	Leu	Gln	Ala	Glu	Glu	Asp	Glu						
					1445					1450					1455							
10	a	g	g	a	a	t	c	c	g	g	a	g	a	t	c	t	g	c	g	a		6217
	Arg	Glu	Val	Ser	Val	Pro	Ala	Glu	Ile	Leu	Arg	Arg	Ser	Arg	Lys	Phe						
				1460					1465						1470							
15	c	c	t	c	a	g	a	t	g	c	c	c	a	t	a	t	a	a	c	c		6265
	Pro	Arg	Ala	Met	Pro	Ile	Trp	Ala	Arg	Pro	Asp	Tyr	Asn	Pro	Pro	Leu						
				1475				1480					1485									
20	t	t	a	g	a	t	t	g	a	a	g	a	c	c	g	a	c	t	a	c		6313
	Leu	Glu	Ser	Trp	Lys	Asp	Pro	Asp	Tyr	Val	Pro	Pro	Val	Val	His	Gly						
		1490				1495				1500												
25	t	g	t	c	c	a	t	t	g	c	c	c	a	t	a	c	c	a	c	g		6361
	Cys	Pro	Leu	Pro	Pro	Ala	Lys	Ala	Pro	Pro	Ile	Pro	Pro	Pro	Arg	Arg						
	1505				1510				1515						1520							
30	a	a	g	a	a	c	g	t	t	g	t	c	a	g	a	a	a	a	c	c		6409
	Lys	Arg	Thr	Val	Val	Leu	Ser	Glu	Ser	Thr	Val	Ser	Ser	Ala	Leu	Ala						
				1525				1530					1535									
35	g	a	g	c	t	c	c	a	a	a	a	c	c	t	t	c	c	a	a	a		6457
	Glu	Leu	Ala	Thr	Lys	Thr	Phe	Gly	Ser	Ser	Glu	Ser	Ser	Ala	Val	Asp						
				1540				1545					1550									
40	a	g	c	g	a	c	g	c	c	c	c	c	c	t	c	c	c	c	c		6505	
	Ser	Gly	Thr	Ala	Thr	Ala	Ser	Pro	Asp	Gln	Pro	Ser	Asp	Asp	Gly	Asp						
		1555				1560				1565												
45	g	c	g	g	a	t	c	c	c	c	c	c	c	c	c	c	c	c	c		6553	
	Ala	Gly	Ser	Asp	Val	Glu	Ser	Tyr	Ser	Ser	Met	Pro	Pro	Leu	Glu	Gly						
		1570				1575				1580												
50	g	a	g	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c		6601	
	Glu	Pro	Gly	Asp	Pro	Asp	Leu	Ser	Asp	Gly	Ser	Trp	Ser	Thr	Val	Ser						
	1585				1590				1595						1600							
55	g	a	g	a	g	a	g	a	g	a	g	a	g	a	g	a	g	a	g		6649	
	Glu	Glu	Ala	Ser	Glu	Asp	Val	Val	Cys	Cys	Ser	Met	Ser	Tyr	Thr	Trp						
				1605				1610					1615									
60	a	c	a	g	c	c	c	t	a	c	a	c	c	c	c	c	c	c	c		6697	
	Thr	Gly	Ala	Leu	Ile	Thr	Pro	Cys	Ala	Ala	Glu	Glu	Thr	Lys	Leu	Pro						
				1620				1625					1630									
65	a	t	c	a	a	c	t	c	t	t	t	c	c	a	a	c	t	t	t		6745	
	Ile	Asn	Ala	Leu	Ser	Asn	Ser	Leu	Leu	Arg	His	His	Asn	Leu	Val	Tyr						
		1635				1640				1645												
70	g	c	t	a	a	c	a	c	a	c	a	c	a	c	a	c	a	c	a		6793	
	Gct	aca	aca	tct	cgc	agc	gca	agc	ctg	cgg	cag	aag	aag	gtc	acc	ttt						

	Ala Thr Thr Ser Arg Ser Ala Ser Leu Arg Gln Lys Lys Val Thr Phe	
	1650 1655 1660	
5	gac aga ctg cag gtc ctg gac gac cac tac cgg gac gtg ctc aag gag Asp Arg Leu Gln Val Leu Asp Asp His Tyr Arg Asp Val Leu Lys Glu	6841
	1665 1670 1675 1680	
10	atg aag gcg aag gcg tcc aca gtt aag gct aaa ctt cta tcc gtg gag Met Lys Ala Lys Ala Ser Thr Val Lys Ala Lys Leu Leu Ser Val Glu	6889
	1685 1690 1695	
15	gaa gcc tgt aag ctg acg ccc cca cat tcg gcc aga tct aaa ttt ggc Glu Ala Cys Lys Leu Thr Pro Pro His Ser Ala Arg Ser Lys Phe Gly	6937
	1700 1705 1710	
	tat ggg gca aag gac gtc cgg aac cta tcc agc aag gcc gtt aac cac Tyr Gly Ala Lys Asp Val Arg Asn Leu Ser Ser Lys Ala Val Asn His	6985
	1715 1720 1725	
20	atc cgc tcc gtg tgg aag gac ttg ctg gaa gac act gag aca cca att Ile Arg Ser Val Trp Lys Asp Leu Leu Glu Asp Thr Glu Thr Pro Ile	7033
	1730 1735 1740	
25	gac acc acc atc atg gca aaa aat gag gtt ttc tgc gtc caa cca gag Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln Pro Glu	7081
	1745 1750 1755 1760	
30	aag ggg ggc cgc aag cca gct cgc ctt atc gta ttc cca gat ttg ggg Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp Leu Gly	7129
	1765 1770 1775	
35	gtt cgt gtg tgc gag aaa atg gcc ctt tac gat gtg gtc tcc acc ctc Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Ser Thr Leu	7177
	1780 1785 1790	
	cct cag gcc gtg atg ggc tct tca tac gga ttc caa tac tct cct gga Pro Gln Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser Pro Gly	7225
	1795 1800 1805	
40	cag cgg gtc gag ttc ctg gtg aat gcc tgg aaa gcg aag aaa tgc cct Gln Arg Val Glu Phe Leu Val Asn Ala Trp Lys Ala Lys Lys Cys Pro	7273
	1810 1815 1820	
45	atg ggc ttc gca tat gac acc cgc tgt ttt gac tca acg gtc act gag Met Gly Phe Ala Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val Thr Glu	7321
	1825 1830 1835 1840	
50	aat gac atc cgt gtt gag gag tca atc tac caa tgt tgt gac ttg gcc Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln Cys Cys Asp Leu Ala	7369
	1845 1850 1855	
55	ccc gaa gcc aga cag gcc ata agg tcg ctc aca gag cgg ctt tac atc Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr Glu Arg Leu Tyr Ile	7417
	1860 1865 1870	
	ggg ggc ccc ctg act aat tct aaa ggg cag aac tgc ggc tat cgc cgg Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn Cys Gly Tyr Arg Arg	7465

	1875	1880	1885	
5	tgc cgc gcg agc ggt gta ctg acg acc agc tgc ggt aat acc ctc aca Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr Leu Thr 1890 1895 1900			7513
10	tgt tac ttg aag gcc gct gcg gcc tgt cga gct gcg aag ctc cag gac Cys Tyr Leu Lys Ala Ala Ala Cys Arg Ala Ala Lys Leu Gln Asp 1905 1910 1915 1920			7561
	tgc acg atg ctc gta tgc gga gac gac ctt gtc gtt atc tgt gaa agc Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys Glu Ser 1925 1930 1935			7609
15	gcg ggg acc caa gag gac gag gcg agc cta cgg gcc ttc acg gag gct Ala Gly Thr Gln Glu Asp Glu Ala Ser Leu Arg Ala Phe Thr Glu Ala 1940 1945 1950			7657
20	atg act aga tac tct gcc ccc cct ggg gac ccg ccc aaa cca gaa tac Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Lys Pro Glu Tyr 1955 1960 1965			7705
25	gac ttg gag ttg ata aca tca tgc tcc tcc aat gtg tca gtc gcg cac Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val Ala His 1970 1975 1980			7753
30	gat gca tct ggc aaa agg gtg tac tat ctc acc cgt gac ccc acc acc Asp Ala Ser Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro Thr Thr 1985 1990 1995 2000			7801
	ccc ctt gcg cgg gct gcg tgg gag aca gct aga cac act cca gtc aat Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro Val Asn 2005 2010 2015			7849
35	tcc tgg cta ggc aac atc atc atg tat gcg ccc acc ttg tgg gca agg Ser Trp Leu Gly Asn Ile Ile Met Tyr Ala Pro Thr Leu Trp Ala Arg 2020 2025 2030			7897
40	atg atc ctg atg act cat ttc ttc tcc atc ctt cta gct cag gaa caa Met Ile Leu Met Thr His Phe Phe Ser Ile Leu Leu Ala Gln Glu Gln 2035 2040 2045			7945
45	ctt gaa aaa gcc cta gat tgt cag atc tac ggg gcc tgt tac tcc att Leu Glu Lys Ala Leu Asp Cys Gln Ile Tyr Gly Ala Cys Tyr Ser Ile 2050 2055 2060			7993
50	gag cca ctt gac cta cct cag atc att caa cga ctc cac ggc ctt agc Glu Pro Leu Asp Leu Pro Gln Ile Ile Gln Arg Leu His Gly Leu Ser 2065 2070 2075 2080			8041
	gca ttt tca ctc cat agt tac tct cca ggt gag atc aat agg gtg gct Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg Val Ala 2085 2090 2095			8089
55	tca tgc ctc agg aaa ctt ggg gta ccg ccc ttg cga gtc tgg aga cat Ser Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Val Trp Arg His 2100 2105 2110			8137

5 cgg gcc aga agt gtc cgc gct agg cta ctg tcc cag ggg ggg agg gct 8185
 Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ser Gln Gly Gly Arg Ala
 2115 2120 2125

10 gcc act tgt ggc aag tac ctc ttc aac tgg gca gta agg acc aag ctc 8233
 Ala Thr Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr Lys Leu
 2130 2135 2140

15 aaa ctc act cca atc ccg gct gcg tcc cag ttg gat tta tcc agc tgg 8281
 Lys Leu Thr Pro Ile Pro Ala Ala Ser Gln Leu Asp Leu Ser Ser Trp
 2145 2150 2155 2160

20 ttc gtt gct ggt tac agc ggg gga gac ata tat cac agc ctg tct cgt 8329
 Phe Val Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Leu Ser Arg
 2165 2170 2175

25 gcc cga ccc cgc tgg ttc atg tgg tgc cta ctc cta ctt tct gta ggg 8377
 Ala Arg Pro Arg Trp Phe Met Trp Cys Leu Leu Leu Leu Ser Val Gly
 2180 2185 2190

30 gta ggc atc tat cta ctc ccc aac cga tga acgaggagct aaacactcca 8427
 Val Gly Ile Tyr Leu Leu Pro Asn Arg *
 2195 2200

35 ggccaatagg ccatcctggt tttttccctt ttttttttcc tttttttttt tttttttttt 8487
 tttttttttt tttttctcctt tttttttcct ctttttttcc ttttctttcc tttgggtggct 8547
 ccatcttagc cctagtcacg gctagctgtg aaaggtccgt gagccgcttg actgcagaga 8607
 gtgctgatac tggcctctct gcagatcaag t 8638

40 <210> 8
 <211> 6
 <212> DNA
 <213> HCV

45 <400> 8
 accagc 6

50 <210> 9
 <211> 63
 <212> DNA
 <213> HCV

55 <400> 9
 gaattccaga tggcgcgccc agatgttaac cagatccatg gcacactcta gactactgtc 60
 gac 63

60 <210> 10
 <211> 33
 <212> DNA
 <213> HCV

65 <400> 10
 cggaatcgtt aacagaccac aacggtttcc ctc 33

70 <210> 11
 <211> 30

	<212> DNA	
	<213> HCV	
5	<400> 11 ggcgtaccca tggattatc gtgtttttca	30
	<210> 12	
	<211> 45	
10	<212> DNA	
	<213> HCV	
	<400> 12 gcatatgaat tctaatacga ctactatag gccagcccc gattg	45
15	<210> 13	
	<211> 45	
	<212> DNA	
	<213> HCV	
20	<400> 13 ggcgcgccct ttggtttttc ttgaggttt aggatctgtg ctcac	45
	<210> 14	
	<211> 36	
25	<212> DNA	
	<213> HCV	
	<400> 14 aaagggcgca tgattgaaca agatggattg caccga	36
30	<210> 15	
	<211> 39	
	<212> DNA	
	<213> HCV	
35	<400> 15 gcatatgtta actcagaaga actcgtcaag aaggcgata	39
	<210> 16	
40	<211> 45	
	<212> DNA	
	<213> HCV	
	<400> 16 gcatatgaat tctaatacga ctactatag gccagcccc gattg	45
	<210> 17	
	<211> 30	
50	<212> DNA	
	<213> HCV	
	<400> 17 acgcagaaag cgtctagcca tggcgtagt	30
55	<210> 18	
	<211> 30	
	<212> DNA	

	<213> HCV	
	<400> 18	
5	tcccggggca ctcgcaagca ccctatcagg	30
	<210> 19	
	<211> 26	
	<212> DNA	
10	<213> HCV	
	<220>	
	<223> Label with FAM: fluorescence reporter dye	
	<223> Label with TAMRA: Quencher dye	
15	<400> 19	
	tggtctgcgg aacgggtgag tacacc	26
	<210> 20	
20	<211> 45	
	<212> DNA	
	<213> HCV	
	<400> 20	
25	gtggacgaat tctaatacga ctcactataa ccagcccccg attgg	45
	<210> 21	
	<211> 27	
	<212> DNA	
30	<213> HCV	
	<400> 21	
	ggaacgcccg tcgtggccag ccacgat	27
35	<210> 22	
	<211> 23	
	<212> DNA	
	<213> HCV	
40	<400> 22	
	gtcgtcttct ctgacatgga gac	23
	<210> 23	
	<211> 27	
45	<212> DNA	
	<213> HCV	
	<400> 23	
50	gagttgctca gtggattgat gggcagc	27
	<210> 24	
	<211> 8638	
	<212> DNA	
	<213> HCV	
55	<220>	
	<221> CDS	

<222> (1802)...(8407)

<400> 24

5	accagccccc	gattgggggc	gacactccac	catagatcac	tcccctgtga	ggaactactg	60
	tcttcacgca	gaaagcgtct	agccatggcg	ttagtatgag	tgtcgtgcag	cctccaggac	120
	ccccctccc	gggagagcca	tagtggctctg	cggaaccggg	gagtacaccg	gaattgccag	180
	gacgaccggg	tcctttcttg	gatcaaccgg	ctcaatgcct	ggagatttgg	gcgtgcccc	240
	gcgagactgc	tagccgagta	gtgttggtgc	gcgaaaggcc	ttgtggtact	gcctgatagg	300
	gtgcttgcca	gtgccccggg	aggtctcgta	gaccgtgcac	catgagcacg	aatcctaaac	360
10	ctcaaagaaa	aaccaaaggg	cgcgccatga	ttgaacaaga	tggattgcac	gcaggttctc	420
	cggccgcttg	ggtggagagg	ctattcggct	atgactgggc	acaacagaca	atcggctgct	480
	ctgatgccgc	cgtgttccgg	ctgtcagcgc	aggggcgccc	ggttcttttt	gtcaagaccg	540
	acctgtccgg	tgccctgaat	gaactgcagg	acgaggcagc	gcggctatcg	tggctggcca	600
	cgacgggcgt	tccttgcgca	gctgtgctcg	acgttgtcac	tgaagcggga	agggactggc	660
15	tgctattggg	cgaagtgccg	gggcaggatc	tcctgtcatc	tcaccttgct	cctgccgaga	720
	aagtatccat	catggctgat	gcaatgcggc	ggctgcatac	gcttgatccg	gctacctgcc	780
	cattcgacca	ccaagcgaaa	catcgcatcg	agcgagcacg	tactcggatg	gaagccggtc	840
	ttgtcgatca	ggatgatctg	gacgaagagc	atcaggggct	cgcgccagcc	gaactgttcg	900
20	ccaggctcaa	ggcgcgcgat	cccgcggcg	aggatctcgt	cgtgacccat	ggcgatgcct	960
	gcttgccgaa	tatcatggtg	gaaaatggcc	gcttttctgg	attcatcgac	tgtggccggc	1020
	tgggtgtggc	ggaccgctat	caggacatag	cgttggctac	ccgtgatatt	gctgaagagc	1080
	ttggcgggca	atgggctgac	cgcttcctcg	tgctttacgg	tatcgccgct	cccgattcgc	1140
	agcgcacgc	cttctatcgc	cttcttgacg	agttcttctg	agttcgcgcc	cagatgttaa	1200
25	cagaccacaa	cggtttccct	ctagcgggat	caattccgcc	ccccccccta	acgttactgg	1260
	ccgaagccgc	ttggaataag	gccggtgtgc	gtttgtctat	atgttatatt	ccaccatatt	1320
	gccgtctttt	ggcaatgtga	gggcccggaa	acctggccct	gtcttcttga	cgagcattcc	1380
	taggggtctt	tcccctctcg	ccaaaggaat	gcaaggctctg	ttgaatgtcg	tgaagggaagc	1440
	agttcctctg	gaagcttctt	gaagacaaac	aacgtctgta	gcgacccttt	gcaggcagcg	1500
30	gaacccccca	cctggcgaca	ggtgcctctg	cggccaaaag	ccacgtgtat	aagatacacc	1560
	tgcaaaggcg	gcacaacccc	agtgccacgt	tgtgagttgg	atagttgtgg	aaagagtcaa	1620
	atggctctcc	tcaagcgtat	tcaacaaggg	gctgaaggat	gccagaagg	tacccattg	1680
	tatgggatct	gatctggggc	ctcgggtgcac	atgctttaca	tgtgtttagt	cgagggttaa	1740
	aaacgtctag	gcccccgaa	ccacggggac	gtggttttcc	tttgaaaaac	acgataatac	1800
35	c atg gac cgg gag atg gca gca tcg tgc gga ggc gcg gtt ttc gta ggt	Met Asp Arg Glu Met Ala Ala Ser Cys Gly Gly Ala Val Phe Val Gly	1849				
	1	5	10	15			
40	ctg ata ctc ttg acc ttg tca ccg cac tat aag ctg ttc ctc gct agg	Leu Ile Leu Leu Thr Leu Ser Pro His Tyr Lys Leu Phe Leu Ala Arg	1897				
	20	25	30				
45	ctc ata tgg tgg tta caa tat ttt atc acc agg gcc gag gca cac ttg	Leu Ile Trp Trp Leu Gln Tyr Phe Ile Thr Arg Ala Glu Ala His Leu	1945				
	35	40	45				
50	caa gtg tgg atc ccc ccc ctc aac gtt cgg ggg ggc cgc gat gcc gtc	Gln Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Val	1993				
	50	55	60				
55	atc ctc ctc acg tgc gcg atc cac cca gag cta atc ttt acc atc acc	Ile Leu Leu Thr Cys Ala Ile His Pro Glu Leu Ile Phe Thr Ile Thr	2041				
	65	70	75	80			
55	aaa atc ttg ctc gcc ata ctc ggt cca ctc atg gtg ctc cag gct ggt	Lys Ile Leu Leu Ala Ile Leu Gly Pro Leu Met Val Leu Gln Ala Gly	2089				
	85	90	95				

	ata acc aaa gtg ccg tac ttc gtg cgc gca cac ggg ctc att cgt gca	2137
	Ile Thr Lys Val Pro Tyr Phe Val Arg Ala His Gly Leu Ile Arg Ala	
	100 105 110	
5	tgc atg ctg gtg cgg aag gtt gct ggg ggt cat tat gtc caa atg gct	2185
	Cys Met Leu Val Arg Lys Val Ala Gly Gly His Tyr Val Gln Met Ala	
	115 120 125	
10	ctc atg aag ttg gcc gca ctg aca ggt acg tac gtt tat gac cat ctc	2233
	Leu Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu	
	130 135 140	
15	acc cca ctg cgg gac tgg gcc cac gcg ggc cta cga gac ctt gcg gtg	2281
	Thr Pro Leu Arg Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val	
	145 150 155 160	
20	gca gtt gag ccc gtc gtc ttc tct gat atg gag acc aag gtt atc acc	2329
	Ala Val Glu Pro Val Val Phe Ser Asp Met Glu Thr Lys Val Ile Thr	
	165 170 175	
25	tgg ggg gca gac acc gcg gcg tgt ggg gac atc atc ttg ggc ctg ccc	2377
	Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Leu Gly Leu Pro	
	180 185 190	
30	gtc tcc gcc cgc agg ggg agg gag ata cat ctg gga ccg gca gac agc	2425
	Val Ser Ala Arg Arg Gly Arg Glu Ile His Leu Gly Pro Ala Asp Ser	
	195 200 205	
35	ctt gaa ggg cag ggg tgg cga ctc ctc gcg cct att acg gcc tac tcc	2473
	Leu Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser	
	210 215 220	
40	caa cag acg cga ggc cta ctt ggc tgc atc atc act agc ctc aca ggc	2521
	Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly	
	225 230 235 240	
45	cgg gac agg aac cag gtc gag ggg gag gtc caa gtg gtc tcc acc gca	2569
	Arg Asp Arg Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala	
	245 250 255	
50	aca caa tct ttc ctg gcg acc tgc gtc aat ggc gtg tgt tgg act gtc	2617
	Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val	
	260 265 270	
55	tat cat ggt gcc ggc tca aag acc ctt gcc ggc cca aag ggc cca atc	2665
	Tyr His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile	
	275 280 285	
60	acc caa atg tac acc aat gtg gac cag gac ctc gtc ggc tgg caa gcg	2713
	Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala	
	290 295 300	
65	ccc ccc ggg gcg cgt tcc ttg aca cca tgc acc tgc ggc agc tcg gac	2761
	Pro Pro Gly Ala Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp	
	305 310 315 320	
70	ctt tac ttg gtc acg agg cat gcc gat gtc att ccg gtg cgc cgg cgg	2809

	Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg	
	325 330 335	
5	ggc gac agc agg ggg agc cta ctc tcc ccc agg ccc gtc tcc tac ttg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu	2857
	340 345 350	
10	aag ggc tct tcg ggc ggt cca ctg ctc tgc ccc tcg ggg cac gct gtg Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val	2905
	355 360 365	
15	ggc atc ttt cgg gct gcc gtg tgc acc cga ggg gtt gcg aag gcg gtg Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val	2953
	370 375 380	
	gac ttt gta ccc gtc gag tct atg gaa acc act atg cgg tcc ccg gtc Asp Phe Val Pro Val Glu Ser Met Glu Thr Thr Met Arg Ser Pro Val	3001
	385 390 395 400	
20	ttc acg gac aac tcg tcc cct ccg gcc gta ccg cag aca ttc cag gtg Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro Gln Thr Phe Gln Val	3049
	405 410 415	
25	gcc cat cta cac gcc cct act ggt agc ggc aag agc act aag gtg ccg Ala His Leu His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val Pro	3097
	420 425 430	
30	gct gcg tat gca gcc caa ggg tat aag gtg ctt gtc ctg aac ccg tcc Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro Ser	3145
	435 440 445	
35	gtc gcc gcc acc cta ggt ttc ggg gcg tat atg tct aag gca cat ggt Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His Gly	3193
	450 455 460	
	atc gac cct aac atc aga acc ggg gta agg acc atc acc acg ggt gcc Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly Ala	3241
	465 470 475 480	
40	ccc atc acg tac tcc acc tat ggc aag ttt ctt gcc gac ggt ggt tgc Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys	3289
	485 490 495	
45	tct ggg ggc gcc tat gac atc ata ata tgt gat gag tgc cac tca act Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser Thr	3337
	500 505 510	
50	gac tcg acc act atc ctg ggc atc ggc aca gtc ctg gac caa gcg gag Asp Ser Thr Thr Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala Glu	3385
	515 520 525	
	acg gct gga gcg cga ctc gtc gtg ctc gcc acc gct acg cct ccg gga Thr Ala Gly Ala Arg Leu Val Leu Ala Thr Ala Thr Pro Pro Gly	3433
	530 535 540	
55	tcg gtc acc gtg cca cat cca aac atc gag gag gtg gct ctg tcc agc Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser Ser	3481

	545		550		555		560	
5	act gga gaa atc ccc ttt tat ggc aaa gcc atc ccc atc gag acc atc		565		570		575	3529
	Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Ile Glu Thr Ile							
10	aag ggg ggg agg cac ctc att ttc tgc cat tcc aag aag aaa tgt gat		580		585		590	3577
	Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys Asp							
15	gag ctc gcc gcg aag ctg tcc ggc ctc gga ctc aat gct gta gca tat		595		600		605	3625
	Glu Leu Ala Ala Lys Leu Ser Gly Leu Gly Leu Asn Ala Val Ala Tyr							
20	tac cgg ggc ctt gat gta tcc gtc ata cca act agc gga gac gtc att		610		615		620	3673
	Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val Ile							
25	gtc gta gca acg gac gct cta atg acg ggc ttt acc ggc gat ttc gac		625		630		635	3721
	Val Val Ala Thr Asp Ala Leu Met Thr Gly Phe Thr Gly Asp Phe Asp							
30	tca gtg atc gac tgc aat aca tgt gtc acc cag aca gtc gac ttc agc		645		650		655	3769
	Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser							
35	ctg gac ccg acc ttc acc att gag acg acg acc gtg cca caa gac gcg		660		665		670	3817
	Leu Asp Pro Thr Phe Thr Ile Glu Thr Thr Thr Val Pro Gln Asp Ala							
40	gtg tca cgc tcg cag cgg cga ggc agg act ggt agg ggc agg atg ggc		675		680		685	3865
	Val Ser Arg Ser Gln Arg Arg Gly Arg Thr Gly Arg Gly Arg Met Gly							
45	att tac agg ttt gtg act cca gga gaa cgg ccc tcg ggc atg ttc gat		690		695		700	3913
	Ile Tyr Arg Phe Val Thr Pro Gly Glu Arg Pro Ser Gly Met Phe Asp							
50	tcc tcg gtt ctg tgc gag tgc tat gac gcg ggc tgt gct tgg tac gag		705		710		715	3961
	Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu							
55	ctc acg ccc gcc gag acc tca gtt agg ttg cgg gct tac cta aac aca		725		730		735	4009
	Leu Thr Pro Ala Glu Thr Ser Val Arg Leu Arg Ala Tyr Leu Asn Thr							
60	cca ggg ttg ccc gtc tgc cag gac cat ctg gag ttc tgg gag agc gtc		740		745		750	4057
	Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Ser Val							
65	ttt aca ggc ctc acc cac ata gac gcc cat ttc ttg tcc cag act aag		755		760		765	4105
	Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys							
70	cag gca gga gac aac ttc ccc tac ctg gta gca tac cag gct acg gtg		770		775		780	4153
	Gln Ala Gly Asp Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val							

	tgc gcc agg gct cag gct cca cct cca tcg tgg gac caa atg tgg aag	4201
	Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp Lys	
	785 790 795 800	
5	tgt ctc ata cgg cta aag cct acg ctg cac ggg cca acg ccc ctg ctg	4249
	Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu	
	805 810 815	
10	tat agg ctg gga gcc gtt caa aac gag gtt act acc aca cac ccc ata	4297
	Tyr Arg Leu Gly Ala Val Gln Asn Glu Val Thr Thr Thr His Pro Ile	
	820 825 830	
15	acc aaa tac atc atg gca tgc atg tcg gct gac ctg gag gtc gtc acg	4345
	Thr Lys Tyr Ile Met Ala Cys Met Ser Ala Asp Leu Glu Val Val Thr	
	835 840 845	
20	agc acc tgg gtg ctg gta ggc gga gtc cta gca gct ctg gcc gcg tat	4393
	Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr	
	850 855 860	
25	tgc ctg aca aca ggc agc gtg gtc att gtg ggc agg atc atc ttg tcc	4441
	Cys Leu Thr Thr Gly Ser Val Val Ile Val Gly Arg Ile Ile Leu Ser	
	865 870 875 880	
	gga aag ccg gcc atc att ccc gac agg gaa gtc ctt tac cgg gag ttc	4489
	Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe	
	885 890 895	
30	gat gag atg gaa gag tgc gcc tca cac ctc cct tac atc gaa cag gga	4537
	Asp Glu Met Glu Glu Cys Ala Ser His Leu Pro Tyr Ile Glu Gln Gly	
	900 905 910	
35	atg cag ctc gcc gaa caa ttc aaa cag aag gca atc ggg ttg ctg caa	4585
	Met Gln Leu Ala Glu Gln Phe Lys Gln Lys Ala Ile Gly Leu Leu Gln	
	915 920 925	
40	aca gcc acc aag caa gcg gag gct gct gct ccc gtg gtg gaa tcc aag	4633
	Thr Ala Thr Lys Gln Ala Glu Ala Ala Ala Pro Val Val Glu Ser Lys	
	930 935 940	
45	tgg cgg acc ctc gaa gcc ttc tgg gcg aag cat atg tgg aat ttc atc	4681
	Trp Arg Thr Leu Glu Ala Phe Trp Ala Lys His Met Trp Asn Phe Ile	
	945 950 955 960	
	agc ggg ata caa tat tta gca ggc ttg tcc act ctg cct ggc aac ccc	4729
	Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn Pro	
	965 970 975	
50	gcg ata gca tca ctg atg gca ttc aca gcc tct atc acc agc ccg ctc	4777
	Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ser Ile Thr Ser Pro Leu	
	980 985 990	
55	acc acc caa cat acc ctc ctg ttt aac atc ctg ggg gga tgg gtg gcc	4825
	Thr Thr Gln His Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Ala	
	995 1000 1005	

	gcc caa ctt gct cct ccc agc gct gct tct gct ttc gta ggc gcc ggc	4873
	Ala Gln Leu Ala Pro Pro Ser Ala Ala Ser Ala Phe Val Gly Ala Gly	
	1010 1015 1020	
5	atc gct gga gcg gct gtt ggc agc ata ggc ctt ggg aag gtg ctt gtg	4921
	Ile Ala Gly Ala Ala Val Gly Ser Ile Gly Leu Gly Lys Val Leu Val	
	1025 1030 1035 1040	
10	gat att ttg gca ggt tat gga gca ggg gtg gca ggc gcg ctc gtg gcc	4969
	Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val Ala	
	1045 1050 1055	
15	ttt aag gtc atg agc ggc gag atg ccc tcc acc gag gac ctg gtt aac	5017
	Phe Lys Val Met Ser Gly Glu Met Pro Ser Thr Glu Asp Leu Val Asn	
	1060 1065 1070	
20	cta ctc cct gct atc ctc tcc cct ggc gcc cta gtc gtc ggg gtc gtg	5065
	Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val Val	
	1075 1080 1085	
25	tgc gca gcg ata ctg cgt cgg cac gtg ggc cca ggg gag ggg gct gtg	5113
	Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala Val	
	1090 1095 1100	
30	cag tgg atg aac cgg ctg ata gcg ttc gct tcg cgg ggt aac cac gtc	5161
	Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His Val	
	1105 1110 1115 1120	
35	tcc ccc acg cac tat gtg cct gag agc gac gct gca gca cgt gtc act	5209
	Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val Thr	
	1125 1130 1135	
40	cag atc ctc tct agt ctt acc atc act cag ctg ctg aag agg ctt cac	5257
	Gln Ile Leu Ser Ser Leu Thr Ile Thr Gln Leu Leu Lys Arg Leu His	
	1140 1145 1150	
45	cag tgg atc aac gag gac tgc tcc acg cca tgc tcc ggc tcg tgg cta	5305
	Gln Trp Ile Asn Glu Asp Cys Ser Thr Pro Cys Ser Gly Ser Trp Leu	
	1155 1160 1165	
50	aga gat gtt tgg gat tgg ata tgc acg gtg ttg act gat ttc aag acc	5353
	Arg Asp Val Trp Asp Trp Ile Cys Thr Val Leu Thr Asp Phe Lys Thr	
	1170 1175 1180	
55	tgg ctc cag tcc aag ctc ctg ccg cga ttg ccg gga gtc ccc ttc ttc	5401
	Trp Leu Gln Ser Lys Leu Leu Pro Arg Leu Pro Gly Val Pro Phe Phe	
	1185 1190 1195 1200	
55	tca tgt caa cgt ggg tac aag gga gtc tgg cgg ggc gac ggc atc atg	5449
	Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile Met	
	1205 1210 1215	
55	caa acc acc tgc cca tgt gga gca cag atc acc gga cat gtg aaa aac	5497
	Gln Thr Thr Cys Pro Cys Gly Ala Gln Ile Thr Gly His Val Lys Asn	
	1220 1225 1230	
	ggt tcc atg agg atc gtg ggg cct agg acc tgt agt aac acg tgg cat	5545

	Gly	Ser	Met	Arg	Ile	Val	Gly	Pro	Arg	Thr	Cys	Ser	Asn	Thr	Trp	His	
			1235					1240					1245				
5	gga	aca	ttc	ccc	att	aac	gcg	tac	acc	acg	ggc	ccc	tgc	acg	ccc	tcc	5593
	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	Thr	Thr	Gly	Pro	Cys	Thr	Pro	Ser	
		1250					1255					1260					
10	ccg	gcg	cca	aat	tat	tct	agg	gcg	ctg	tgg	cgg	gtg	gct	gct	gag	gag	5641
	Pro	Ala	Pro	Asn	Tyr	Ser	Arg	Ala	Leu	Trp	Arg	Val	Ala	Ala	Glu	Glu	
	1265					1270					1275				1280		
15	tac	gtg	gag	gtt	acg	cgg	gtg	ggg	gat	ttc	cac	tac	gtg	acg	ggc	atg	5689
	Tyr	Val	Glu	Val	Thr	Arg	Val	Gly	Asp	Phe	His	Tyr	Val	Thr	Gly	Met	
					1285					1290					1295		
20	acc	act	gac	aac	gta	aag	tgc	ccg	tgt	cag	gtt	ccg	gcc	ccc	gaa	ttc	5737
	Thr	Thr	Asp	Asn	Val	Lys	Cys	Pro	Cys	Gln	Val	Pro	Ala	Pro	Glu	Phe	
				1300					1305					1310			
25	ttc	aca	gaa	gtg	gat	ggg	gtg	cgg	ttg	cac	agg	tac	gct	cca	gcg	tgc	5785
	Phe	Thr	Glu	Val	Asp	Gly	Val	Arg	Leu	His	Arg	Tyr	Ala	Pro	Ala	Cys	
			1315					1320					1325				
30	aaa	ccc	ctc	cta	cgg	gag	gag	gtc	aca	ttc	ctg	gtc	ggg	ctc	aat	caa	5833
	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Thr	Phe	Leu	Val	Gly	Leu	Asn	Gln	
		1330					1335					1340					
35	tac	ctg	gtt	ggg	tca	cag	ctc	cca	tgc	gag	ccc	gaa	ccg	gac	gta	gca	5881
	Tyr	Leu	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu	Pro	Glu	Pro	Asp	Val	Ala	
	1345					1350					1355				1360		
40	gtg	ctc	act	tcc	atg	ctc	acc	gac	ccc	tcc	cac	att	acg	gcg	gag	acg	5929
	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser	His	Ile	Thr	Ala	Glu	Thr	
					1365					1370					1375		
45	gct	aag	cgt	agg	ctg	gcc	agg	gga	tct	ccc	ccc	tcc	ttg	gcc	agc	tca	5977
	Ala	Lys	Arg	Arg	Leu	Ala	Arg	Gly	Ser	Pro	Pro	Ser	Leu	Ala	Ser	Ser	
				1380				1385						1390			
50	tca	gct	agc	cag	ctg	tct	gcg	cct	tcc	ttg	aag	gca	aca	tgc	act	acc	6025
	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	Ser	Leu	Lys	Ala	Thr	Cys	Thr	Thr	
			1395					1400					1405				
55	cgt	cat	gac	tcc	ccg	gac	gct	gac	ctc	atc	gag	gcc	aac	ctc	ctg	tgg	6073
	Arg	His	Asp	Ser	Pro	Asp	Ala	Asp	Leu	Ile	Glu	Ala	Asn	Leu	Leu	Trp	
		1410					1415					1420					
60	cgg	cag	gag	atg	ggc	ggg	aac	atc	acc	cgc	gtg	gag	tca	gaa	aat	aag	6121
	Arg	Gln	Glu	Met	Gly	Gly	Asn	Ile	Thr	Arg	Val	Glu	Ser	Glu	Asn	Lys	
	1425					1430					1435				1440		
65	gta	gta	att	ttg	gac	tct	ttc	gag	ccg	ctc	caa	gcg	gag	gag	gat	gag	6169
	Val	Val	Ile	Leu	Asp	Ser	Phe	Glu	Pro	Leu	Gln	Ala	Glu	Glu	Asp	Glu	
					1445					1450					1455		
70	agg	gaa	gta	tcc	gtt	ccg	gcg	gag	atc	ctg	cgg	agg	tcc	agg	aaa	ttc	6217
	Arg	Glu	Val	Ser	Val	Pro	Ala	Glu	Ile	Leu	Arg	Arg	Ser	Arg	Lys	Phe	

	1460	1465	1470	
5	cct cga gcg atg ccc ata tgg gca cgc ccg gat tac aac cct cca ctg Pro Arg Ala Met Pro Ile Trp Ala Arg Pro Asp Tyr Asn Pro Pro Leu 1475 1480 1485	6265		
10	tta gag tcc tgg aag gac ccg gac tac gtc cct cca gtg gta cac ggg Leu Glu Ser Trp Lys Asp Pro Asp Tyr Val Pro Pro Val Val His Gly 1490 1495 1500	6313		
15	tgt cca ttg ccg cct gcc aag gcc cct ccg ata cca cct cca cgg agg Cys Pro Leu Pro Pro Ala Lys Ala Pro Pro Ile Pro Pro Pro Arg Arg 1505 1510 1515 1520	6361		
20	aag agg acg gtt gtc ctg tca gaa tct acc gtg tct tct gcc ttg gcg Lys Arg Thr Val Val Leu Ser Glu Ser Thr Val Ser Ser Ala Leu Ala 1525 1530 1535	6409		
25	gag ctc gcc aca aag acc ttc ggc agc tcc gaa tcg tcg gcc gtc gac Glu Leu Ala Thr Lys Thr Phe Gly Ser Ser Glu Ser Ser Ala Val Asp 1540 1545 1550	6457		
30	agc ggc acg gca acg gcc tct cct gac cag ccc tcc gac gac ggc gac Ser Gly Thr Ala Thr Ala Ser Pro Asp Gln Pro Ser Asp Asp Gly Asp 1555 1560 1565	6505		
35	gcg gga tcc gac gtt gag tcg tac tcc tcc atg ccc ccc ctt gag ggg Ala Gly Ser Asp Val Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu Gly 1570 1575 1580	6553		
40	gag ccg ggg gat ccc gat ctc agc gac ggg tct tgg tct acc gta agc Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val Ser 1585 1590 1595 1600	6601		
45	gag gag gct agt gag gac gtc gtc tgc tgc tcg atg tcc tac aca tgg Glu Glu Ala Ser Glu Asp Val Val Cys Cys Ser Met Ser Tyr Thr Trp 1605 1610 1615	6649		
50	aca ggc gcc ctg atc acg cca tgc gct gcg gag gaa acc aag ctg ccc Thr Gly Ala Leu Ile Thr Pro Cys Ala Ala Glu Glu Thr Lys Leu Pro 1620 1625 1630	6697		
55	atc aat gca ctg agc aac tct ttg ctc cgt cac cac aac ttg gtc tat Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu Val Tyr 1635 1640 1645	6745		
60	gct aca aca tct cgc agc gca agc ctg cgg cag aag aag gtc acc ttt Ala Thr Thr Ser Arg Ser Ala Ser Leu Arg Gln Lys Lys Val Thr Phe 1650 1655 1660	6793		
65	gac aga ctg cag gtc ctg gac gac cac tac ccg gac gtg ctc aag gag Asp Arg Leu Gln Val Leu Asp Asp His Tyr Arg Asp Val Leu Lys Glu 1665 1670 1675 1680	6841		
70	atg aag gcg aag gcg tcc aca gtt aag gct aaa ctt cta tcc gtg gag Met Lys Ala Lys Ala Ser Thr Val Lys Ala Lys Leu Leu Ser Val Glu 1685 1690 1695	6889		

	gaa gcc tgt aag ctg acg ccc cca cat tcg gcc aga tct aaa ttt ggc	6937
	Glu Ala Cys Lys Leu Thr Pro Pro His Ser Ala Arg Ser Lys Phe Gly	
	1700 1705 1710	
5	tat ggg gca aag gac gtc cgg aac cta tcc agc aag gcc gtt aac cac	6985
	Tyr Gly Ala Lys Asp Val Arg Asn Leu Ser Ser Lys Ala Val Asn His	
	1715 1720 1725	
10	atc cgc tcc gtg tgg aag gac ttg ctg gaa gac act gag aca cca att	7033
	Ile Arg Ser Val Trp Lys Asp Leu Leu Glu Asp Thr Glu Thr Pro Ile	
	1730 1735 1740	
15	gac acc acc atc atg gca aaa aat gag gtt ttc tgc gtc caa cca gag	7081
	Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln Pro Glu	
	1745 1750 1755 1760	
20	aag ggg ggc cgc aag cca gct cgc ctt atc gta ttc cca gat ttg ggg	7129
	Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp Leu Gly	
	1765 1770 1775	
25	gtt cgt gtg tgc gag aaa atg gcc ctt tac gat gtg gtc tcc acc ctc	7177
	Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Ser Thr Leu	
	1780 1785 1790	
30	cct cag gcc gtg atg ggc tct tca tac gga ttc caa tac tct cct gga	7225
	Pro Gln Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser Pro Gly	
	1795 1800 1805	
35	cag cgg gtc gag ttc ctg gtg aat gcc tgg aaa gcg aag aaa tgc cct	7273
	Gln Arg Val Glu Phe Leu Val Asn Ala Trp Lys Ala Lys Lys Cys Pro	
	1810 1815 1820	
40	aat gac atc cgt gtt gag gag tca atc tac caa tgt tgt gac ttg gcc	7369
	Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln Cys Cys Asp Leu Ala	
	1845 1850 1855	
45	ccc gaa gcc aga cag gcc ata agg tcg ctc aca gag cgg ctt tac atc	7417
	Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr Glu Arg Leu Tyr Ile	
	1860 1865 1870	
50	ggg ggc ccc ctg act aat tct aaa ggg cag aac tgc ggc tat cgc cgg	7465
	Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn Cys Gly Tyr Arg Arg	
	1875 1880 1885	
55	tgt tac ttg aag gcc gct gcg gcc tgt cga gct gcg aag ctc cag gac	7561
	Cys Tyr Leu Lys Ala Ala Ala Ala Cys Arg Ala Ala Lys Leu Gln Asp	
	1905 1910 1915 1920	

	tgc acg atg ctc gta tgc gga gac gac ctt gtc gtt atc tgt gaa agc	7609
	Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys Glu Ser	
	1925 1930 1935	
5	gcg ggg acc caa gag gac gag gcg agc cta cgg gcc ttc acg gag gct	7657
	Ala Gly Thr Gln Glu Asp Glu Ala Ser Leu Arg Ala Phe Thr Glu Ala	
	1940 1945 1950	
10	atg act aga tac tct gcc ccc cct ggg gac ccg ccc aaa cca gaa tac	7705
	Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Lys Pro Glu Tyr	
	1955 1960 1965	
15	gac ttg gag ttg ata aca tca tgc tcc tcc aat gtg tca gtc gcg cac	7753
	Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val Ala His	
	1970 1975 1980	
20	gat gca tct ggc aaa agg gtg tac tat ctc acc cgt gac ccc acc acc	7801
	Asp Ala Ser Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro Thr Thr	
	1985 1990 1995 2000	
25	ccc ctt gcg cgg gct gcg tgg gag aca gct aga cac act cca gtc aat	7849
	Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro Val Asn	
	2005 2010 2015	
30	tcc tgg cta ggc aac atc atc atg tat gcg ccc acc ttg tgg gca agg	7897
	Ser Trp Leu Gly Asn Ile Ile Met Tyr Ala Pro Thr Leu Trp Ala Arg	
	2020 2025 2030	
35	atg atc ctg atg act cat ttc ttc tcc atc ctt cta gct cag gaa caa	7945
	Met Ile Leu Met Thr His Phe Phe Ser Ile Leu Leu Ala Gln Glu Gln	
	2035 2040 2045	
40	ctt gaa aaa gcc cta gat tgt cag atc tac ggg gcc tgt tac tcc att	7993
	Leu Glu Lys Ala Leu Asp Cys Gln Ile Tyr Gly Ala Cys Tyr Ser Ile	
	2050 2055 2060	
45	gag cca ctt gac cta cct cag atc att caa cga ctc cac ggc ctt agc	8041
	Glu Pro Leu Asp Leu Pro Gln Ile Ile Gln Arg Leu His Gly Leu Ser	
	2065 2070 2075 2080	
50	gca ttt tca ctc cat agt tac tct cca ggt gag atc aat agg gtg gct	8089
	Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg Val Ala	
	2085 2090 2095	
55	tca tgc ctc agg aaa ctt ggg gta ccg ccc ttg cga gtc tgg aga cat	8137
	Ser Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Val Trp Arg His	
	2100 2105 2110	
60	cgg gcc aga agt gtc cgc gct agg cta ctg tcc cag ggg ggg agg gct	8185
	Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ser Gln Gly Gly Arg Ala	
	2115 2120 2125	
65	gcc act tgt ggc aag tac ctc ttc aac tgg gca gta agg acc aag ctc	8233
	Ala Thr Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr Lys Leu	
	2130 2135 2140	
70	aaa ctc act cca atc ccg gct gcg tcc cag ttg gat tta tcc agc tgg	8281

```

Lys Leu Thr Pro Ile Pro Ala Ala Ser Gln Leu Asp Leu Ser Ser Trp
2145                2150                2155                2160

5   ttc gtt gct ggt tac agc ggg gga gac ata tat cac agc ctg tct cgt 8329
    Phe Val Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Leu Ser Arg
                2165                2170                2175

10  gcc cga ccc cgc tgg ttc atg tgg tgc cta ctc cta ctt tct gta ggg 8377
    Ala Arg Pro Arg Trp Phe Met Trp Cys Leu Leu Leu Leu Ser Val Gly
                2180                2185                2190

15  gta ggc atc tat cta ctc ccc aac cga tga acggggagct aaacactcca 8427
    Val Gly Ile Tyr Leu Leu Pro Asn Arg *
                2195                2200

20  ggccaatagg ccatcctggt tttttccctt tttttttttt tttttttttt tttttttttt 8487
    tttttttttt tttttctcctt tttttttcct ctttttttcc tttttctttcc tttggtggct 8547
    ccatccttagc cctagtacag gctagctgtg aaaggtccgt gagccgcttg actgcagaga 8607
    gtgctgatac tggcctctct gcagatcaag t                                     8638

25  <210> 25
    <211> 8638
    <212> DNA
    <213> HCV

30  <220>
    <221> CDS
    <222> (1802)...(8407)

35  <400> 25
    accagcccc gattgggggc gacactccac catagatcac tcccctgtga ggaactactg 60
    tcttcacgca gaaagcgtct agccatggcg ttagtatgag tgtcgtgcag cctccaggac 120
    cccccctccc gggagagcca tagtggctcg cggaaccggg gagtacaccg gaattgccag 180
    gacgaccggg tccttttctg gatcaaccgg ctcaatgcct ggagatttgg gcgtgcccc 240
40  gcgagactgc tagccgagta gtgttggtgc gcgaaaggcc ttgtggtact gcctgatagg 300
    gtgctttgcga gtgccccggg aggtctcgta gaccgtgcac catgagcacg aatcctaaac 360
    ctcaaagaaa aaccaaaggg cgcgccatga ttgaacaaga tggattgcac gcaggttctc 420
    cggccgcttg ggtggagagg ctattcggct atgactgggc acaacagaca atcggctgct 480
    ctgatgccgc cgtgttccgg ctgtcagcgc aggggcgccc ggttcttttt gtcaagaccg 540
50  acctgtccgg tgccctgaat gaactgcagg acgaggcagc gcggctatcg tggctggcca 600
    cgacgggctg tccttgcgca gctgtgctcg acgttgtcac tgaagcggga agggactggc 660
    tgctattggg cgaagtgccg gggcaggatc tcctgtcatc tcaccttgct cctgccgaga 720
    aagtatccat catggctgat gcaatgcggc ggctgcatac gcttgatccg gctacctgcc 780
60  cattcgacca ccaagcgaaa catcgcacg agcgagcacg tactcggatg gaagccggtc 840
    ttgtcgatca ggatgatctg gacgaagagc atcaggggct cgcgccagcc gaactgttcg 900
    ccaggctcaa ggcgcgcatg cccgacggcg aggatctcgt cgtgacccat ggcgatgcct 960
    gcttgccgaa tatcatggtg gaaaatggcc gcttttctgg attcatcgac tgtggccggc 1020
    tgggtgtggc ggaccgctat caggacatag cgttggctac ccgtgatatt gctgaagagc 1080
    ttggcgggcg atgggctgac cgcttcctcg tgctttacgg tatcgccgct cccgattcgc 1140
70  agcgcacgcg cttctatcgc cttcttgacg agttcttctg agttcgcgcc cagatgttaa 1200
    cagaccacaa cggtttccct ctagcgggat caattccgcc ccccccccta acgttactgg 1260
    ccgaagccgc ttggaataag gccggtgtgc gtttgtctat atgttatttt ccaccatatt 1320
    gccgtctttt ggcaatgtga gggcccgga acctggccct gtcttcttga cgagcattcc 1380
80  taggggtctt tcccctctcg ccaaaggaat gcaaggctcg ttgaatgtcg tgaaggaagc 1440
    agttcctctg gaagcttctt gaagacaaac aacgtctgta gcgacccttt gcaggcagcg 1500
    gaacccccca cctggcgaca ggtgcctctg cggccaaaag ccacgtgtat aagatacacc 1560
    tgcaaaggcg gcacaacccc agtgccacgt tgtgagttgg atagttgtgg aaagagtcaa 1620

```

	atggctctcc tcaagcgtat tcaacaaggg gctgaaggat gcccagaagg taccccattg	1680
	tatgggatct gatctggggc ctcggtgcac atgctttaca tgtgttttagt cgaggttaaa	1740
	aaacgtctag gcccccgaa ccacggggac gtggttttcc tttgaaaaac acgataatac	1800
5	c atg gac cgg gag atg gca gca tcg tgc gga ggc gcg gtt ttc gta ggt	1849
	Met Asp Arg Glu Met Ala Ala Ser Cys Gly Gly Ala Val Phe Val Gly	
	1 5 10 15	
10	ctg ata ctc ttg acc ttg tca ccg cac tat aag ctg ttc ctc gct agg	1897
	Leu Ile Leu Leu Thr Leu Ser Pro His Tyr Lys Leu Phe Leu Ala Arg	
	20 25 30	
15	ctc ata tgg tgg tta caa tat ttt atc acc agg gcc gag gca cac ttg	1945
	Leu Ile Trp Trp Leu Gln Tyr Phe Ile Thr Arg Ala Glu Ala His Leu	
	35 40 45	
20	caa gtg tgg atc ccc ccc ctc aac gtt cgg ggg ggc cgc gat gcc gtc	1993
	Gln Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Val	
	50 55 60	
25	atc ctc ctc acg tgc gcg atc cac cca gag cta atc ttt acc atc acc	2041
	Ile Leu Leu Thr Cys Ala Ile His Pro Glu Leu Ile Phe Thr Ile Thr	
	65 70 75 80	
30	aaa atc ttg ctc gcc ata ctc ggt cca ctc atg gtg ctc cag gct ggt	2089
	Lys Ile Leu Leu Ala Ile Leu Gly Pro Leu Met Val Leu Gln Ala Gly	
	85 90 95	
35	ata acc aaa gtg ccg tac ttc gtg cgc gca cac ggg ctc att cgt gca	2137
	Ile Thr Lys Val Pro Tyr Phe Val Arg Ala His Gly Leu Ile Arg Ala	
	100 105 110	
40	tgc atg ctg gtg cgg aag gtt gct ggg ggt cat tat gtc caa atg gct	2185
	Cys Met Leu Val Arg Lys Val Ala Gly Gly His Tyr Val Gln Met Ala	
	115 120 125	
45	ctc atg aag ttg gcc gca ctg aca ggt acg tac gtt tat gac cat ctc	2233
	Leu Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu	
	130 135 140	
50	acc cca ctg cgg gac tgg gcc cac gcg ggc cta cga gac ctt gcg gtg	2281
	Thr Pro Leu Arg Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val	
	145 150 155 160	
55	gca gtt gag ccc gtc gtc ttc tct gat atg gag acc aag gtt atc acc	2329
	Ala Val Glu Pro Val Val Phe Ser Asp Met Glu Thr Lys Val Ile Thr	
	165 170 175	
60	tgg ggg gca gac acc gcg gcg tgt ggg gac atc atc ttg ggc ctg ccc	2377
	Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Leu Gly Leu Pro	
	180 185 190	
65	gtc tcc gcc cgc agg ggg agg gag ata cat ctg gga ccg gca gac agc	2425
	Val Ser Ala Arg Arg Gly Arg Glu Ile His Leu Gly Pro Ala Asp Ser	
	195 200 205	
70	ctt gaa ggg cag ggg tgg cga ctc ctc gcg cct att acg gcc tac tcc	2473
	Leu Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser	

	210	215	220	
5	caa cag acg cga ggc cta ctt ggc tgc atc atc acc agc ctc aca ggc Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly 225 230 235 240	2521		
10	cgg gac agg aac cag gtc gag ggg gag gtc caa gtg gtc tcc acc gca Arg Asp Arg Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala 245 250 255	2569		
15	aca caa tct ttc ctg gcg acc tgc gtc aat ggc gtg tgt tgg act gtc Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val 260 265 270	2617		
20	tat cat ggt gcc ggc tca aag acc ctt gcc ggc cca aag ggc cca atc Tyr His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile 275 280 285	2665		
25	acc caa atg tac acc aat gtg gac cag gac ctc gtc ggc tgg caa gcg Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala 290 295 300	2713		
30	ccc ccc ggg gcg cgt tcc ttg aca cca tgc acc tgc ggc agc tcg gac Pro Pro Gly Ala Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp 305 310 315 320	2761		
35	ctt tac ttg gtc acg aag cat gcc gat gtc att ccg gtg cgc cgg cgg Leu Tyr Leu Val Thr Lys His Ala Asp Val Ile Pro Val Arg Arg Arg 325 330 335	2809		
40	ggc gac agc agg ggg agc cta ctc tcc ccc cgg ccc gtc tcc tac ttg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu 340 345 350	2857		
45	aag ggc tct tcg ggc ggt cca ctg ctc tgc ccc tcg ggg cac gct gtg Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val 355 360 365	2905		
50	ggc atc ttt cgg gct gcc gtg tgc acc cga ggg gtt gcg aag gcg gtg Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val 370 375 380	2953		
55	gac ttt gta ccc gtc gag tct atg gaa acc act atg cgg tcc ccg gtc Asp Phe Val Pro Val Glu Ser Met Glu Thr Thr Met Arg Ser Pro Val 385 390 395 400	3001		
60	ttc acg gac aac tcg tcc cct ccg gcc gta ccg cag aca ttc cag gtg Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro Gln Thr Phe Gln Val 405 410 415	3049		
65	gcc cat cta cac gcc cct act ggt agc ggc aag agc act aag gtg ccg Ala His Leu His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val Pro 420 425 430	3097		
70	gct gcg tat gca gcc caa ggg tat aag gtg ctt gtc ctg aac ccg tcc Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro Ser 435 440 445	3145		

	gtc gcc gcc acc cta ggt ttc ggg gcg tat atg tct aag gca cat ggt	3193
	Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His Gly	
	450 455 460	
5		
	atc gac cct aac atc aga acc ggg gta agg acc atc acc acg ggt gcc	3241
	Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly Ala	
	465 470 475 480	
10		
	ccc atc acg tac tcc acc tat ggc aag ttt ctt gcc gac ggt ggt tgc	3289
	Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys	
	485 490 495	
15		
	tct ggg ggc gcc tat gac atc ata ata tgt gat gag tgc cac tca act	3337
	Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser Thr	
	500 505 510	
20		
	gac tcg acc act atc ctg ggc atc ggc aca gtc ctg gac caa gcg gag	3385
	Asp Ser Thr Thr Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala Glu	
	515 520 525	
25		
	acg gct gga gcg cga ctc gtc gtg ctc gcc acc gct acg cct ccg gga	3433
	Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro Gly	
	530 535 540	
30		
	tcg gtc acc gtg cca cat cca aac atc gag gag gtg gct ctg tcc agc	3481
	Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser Ser	
	545 550 555 560	
35		
	act gga gaa atc ccc ttt tat ggc aaa gcc atc ccc atc gag acc atc	3529
	Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Ile Glu Thr Ile	
	565 570 575	
40		
	aag ggg ggg agg cac ctc att ttc tgc cat tcc aag aag aaa tgc gat	3577
	Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys Asp	
	580 585 590	
45		
	gag ctc gcc gcg aag ctg tcc ggc ctc gga ctc aat gct gta gca tat	3625
	Glu Leu Ala Ala Lys Leu Ser Gly Leu Gly Leu Asn Ala Val Ala Tyr	
	595 600 605	
50		
	tac cgg ggc ctt gat gta tcc gtc ata cca act agc gga gac gtc att	3673
	Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val Ile	
	610 615 620	
55		
	gtc gta gca acg gac gct cta atg acg ggc ttt acc ggc gat ttc gac	3721
	Val Val Ala Thr Asp Ala Leu Met Thr Gly Phe Thr Gly Asp Phe Asp	
	625 630 635 640	
60		
	tca gtg atc gac tgc aat aca tgt gtc acc cag aca gtc gac ttc agc	3769
	Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser	
	645 650 655	
65		
	ctg gac ccg acc ttc acc att gag acg acg acc gtg cca caa gac gcg	3817
	Leu Asp Pro Thr Phe Thr Ile Glu Thr Thr Thr Val Pro Gln Asp Ala	
	660 665 670	

	gtg tca cgc tcg cag cgg cga ggc agg act ggt agg ggc agg atg ggc	3865
	Val Ser Arg Ser Gln Arg Arg Gly Arg Thr Gly Arg Gly Arg Met Gly	
	675 680 685	
5	att tac agg ttt gtg act cca gga gaa cgg ccc tcg ggc atg ttc gat	3913
	Ile Tyr Arg Phe Val Thr Pro Gly Glu Arg Pro Ser Gly Met Phe Asp	
	690 695 700	
10	tcc tcg gtt ctg tgc gag tgc tat gac gcg ggc tgt gct tgg tac gag	3961
	Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu	
	705 710 715 720	
15	ctc acg ccc gcc gag acc tca gtt agg ttg cgg gct tac cta aac aca	4009
	Leu Thr Pro Ala Glu Thr Ser Val Arg Leu Arg Ala Tyr Leu Asn Thr	
	725 730 735	
20	cca ggg ttg ccc gtc tgc cag gac cat ctg gag ttc tgg gag ggc gtc	4057
	Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly Val	
	740 745 750	
25	ttt aca ggc ctc acc cac ata gac gcc cat ttc ttg tcc cag act aag	4105
	Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys	
	755 760 765	
30	cag gca gga gac aac ttc ccc tac ctg gta gca tac cag gct acg gtg	4153
	Gln Ala Gly Asp Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val	
	770 775 780	
35	tgc gcc agg gct cag gct cca cct cca tcg tgg gac caa atg tgg aag	4201
	Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp Lys	
	785 790 795 800	
40	tgt ctc ata cgg cta aag cct acg ctg cac ggg cca acg ccc ctg ctg	4249
	Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu	
	805 810 815	
45	tat agg ctg gga gcc gtt caa aac gag gtt act acc aca cac ccc ata	4297
	Tyr Arg Leu Gly Ala Val Gln Asn Glu Val Thr Thr Thr His Pro Ile	
	820 825 830	
50	acc aaa tac atc atg gca tgc atg tcg gct gac ctg gag gtc gtc acg	4345
	Thr Lys Tyr Ile Met Ala Cys Met Ser Ala Asp Leu Glu Val Val Thr	
	835 840 845	
55	agc acc tgg gtg ctg gta ggc gga gtc cta gca gct ctg gct gcg tat	4393
	Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr	
	850 855 860	
60	tgc ctg aca aca ggc agc gtg gtc att gtg ggc agg atc atc ttg tcc	4441
	Cys Leu Thr Thr Gly Ser Val Val Ile Val Gly Arg Ile Ile Leu Ser	
	865 870 875 880	
65	gga agg ccg gcc atc att ccc gac agg gaa gtc ctt tac cgg gag ttc	4489
	Gly Arg Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe	
	885 890 895	
70	gat gag atg gaa gag tgt gcc tca cac ctc cct tac atc gaa cag gga	4537

	Asp	Glu	Met	Glu	Glu	Cys	Ala	Ser	His	Leu	Pro	Tyr	Ile	Glu	Gln	Gly	
				900					905					910			
5	atg	cag	ctc	gcc	gaa	caa	ttc	aaa	cag	aag	gca	atc	ggg	ttg	ctg	caa	4585
	Met	Gln	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Ile	Gly	Leu	Leu	Gln	
			915					920					925				
10	aca	gcc	acc	aag	caa	gcg	gag	gct	gct	gct	ccc	gtg	gtg	gaa	tcc	aag	4633
	Thr	Ala	Thr	Lys	Gln	Ala	Glu	Ala	Ala	Ala	Pro	Val	Val	Glu	Ser	Lys	
			930				935					940					
15	tgg	cgg	acc	ctc	gaa	gcc	ttc	tgg	gcg	aag	cat	atg	tgg	aat	ttc	atc	4681
	Trp	Arg	Thr	Leu	Glu	Ala	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe	Ile	
	945					950					955					960	
	agc	ggg	ata	caa	tat	tta	gca	ggc	ttg	tcc	act	ctg	cct	ggc	aac	ccc	4729
	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro	Gly	Asn	Pro	
					965				970						975		
20	gcg	ata	gca	tca	ctg	atg	gca	ttc	aca	gcc	tct	atc	acc	agc	ccg	ctc	4777
	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	Ser	Ile	Thr	Ser	Pro	Leu	
				980					985					990			
25	acc	acc	caa	cat	acc	ctc	ctg	ttt	aac	atc	ctg	ggg	gga	tgg	gtg	gcc	4825
	Thr	Thr	Gln	His	Thr	Leu	Leu	Phe	Asn	Ile	Leu	Gly	Gly	Trp	Val	Ala	
			995					1000					1005				
30	gcc	caa	ctt	gct	cct	ccc	agc	gct	gct	tcc	gct	ttc	gta	ggc	gcc	ggc	4873
	Ala	Gln	Leu	Ala	Pro	Pro	Ser	Ala	Ala	Ser	Ala	Phe	Val	Gly	Ala	Gly	
		1010					1015					1020					
35	atc	gct	gga	gcg	gct	gtt	ggc	agc	ata	ggc	ctt	ggg	aag	gtg	ctt	gtg	4921
	Ile	Ala	Gly	Ala	Ala	Val	Gly	Ser	Ile	Gly	Leu	Gly	Lys	Val	Leu	Val	
	1025					1030					1035					1040	
	gat	att	ttg	gca	ggt	tat	gga	gca	ggg	gtg	gca	ggc	gcg	ctc	gtg	gcc	4969
	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	Ala	Gly	Ala	Leu	Val	Ala	
					1045				1050					1055			
40	ttt	aag	gtc	atg	agc	ggc	gag	atg	ccc	tcc	acc	gag	gac	ctg	gtt	aac	5017
	Phe	Lys	Val	Met	Ser	Gly	Glu	Met	Pro	Ser	Thr	Glu	Asp	Leu	Val	Asn	
				1060					1065					1070			
45	cta	ctc	cct	gct	atc	ctc	tcc	cct	ggc	gcc	cta	gtc	gtc	ggg	gtc	gtg	5065
	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val	Val	
			1075					1080						1085			
50	tgc	gca	gcg	ata	ctg	cgt	cgg	cac	gtg	ggc	cca	ggg	gag	ggg	gct	gtg	5113
	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly	Pro	Gly	Glu	Gly	Ala	Val	
		1090					1095					1100					
55	cag	tgg	atg	aac	cgg	ctg	ata	gcg	ttc	gct	tcg	cgg	ggt	aac	cac	gtc	5161
	Gln	Trp	Met	Asn	Arg	Leu	Ile	Ala	Phe	Ala	Ser	Arg	Gly	Asn	His	Val	
	1105					1110					1115					1120	
	tcc	ccc	acg	cac	tat	gtg	cct	gag	agc	gac	gct	gca	gca	cgt	gtc	act	5209
	Ser	Pro	Thr	His	Tyr	Val	Pro	Glu	Ser	Asp	Ala	Ala	Ala	Arg	Val	Thr	

	1125	1130	1135	
5	cag atc ctc tct agt ctt acc atc act cag ctg ctg aag agg ctt cac Gln Ile Leu Ser Ser Leu Thr Ile Thr Gln Leu Leu Lys Arg Leu His 1140 1145 1150	5257		
10	cag tgg atc aac gag gac tgc tcc acg cca tgc tcc ggc tcg tgg cta Gln Trp Ile Asn Glu Asp Cys Ser Thr Pro Cys Ser Gly Ser Trp Leu 1155 1160 1165	5305		
	aga gat gtt tgg gat tgg ata tgc acg gtg ttg act gat ttc aag gcc Arg Asp Val Trp Asp Trp Ile Cys Thr Val Leu Thr Asp Phe Lys Ala 1170 1175 1180	5353		
15	tgg ctc cag tcc aag ctc ctg ccg cga ttg ccg gga gtc ccc ttc ttc Trp Leu Gln Ser Lys Leu Leu Pro Arg Leu Pro Gly Val Pro Phe Phe 1185 1190 1195 1200	5401		
20	tca tgt caa cgt ggg tac aag gga gtc tgg ccg ggc gac ggc atc atg Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile Met 1205 1210 1215	5449		
25	caa acc acc tgc cca tgt gga gca cag atc acc gga cat gtg aaa aac Gln Thr Thr Cys Pro Cys Gly Ala Gln Ile Thr Gly His Val Lys Asn 1220 1225 1230	5497		
30	tgt tcc atg agg atc gtg ggg cct agg acc tgt agt aac acg tgg cat Cys Ser Met Arg Ile Val Gly Pro Arg Thr Cys Ser Asn Thr Trp His 1235 1240 1245	5545		
	gga aca ttc ccc att aac gcg tac acc acg ggc ccc tgc acg ccc tcc Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro Ser 1250 1255 1260	5593		
35	ccg gcg cca aat tat tct agg gcg ctg tgg ccg gtg gct gct gag gag Pro Ala Pro Asn Tyr Ser Arg Ala Leu Trp Arg Val Ala Ala Glu Glu 1265 1270 1275 1280	5641		
40	tac gtg gag gtt acg cga gtg ggg gat ttc cac tac gtg acg ggc atg Tyr Val Glu Val Thr Arg Val Gly Asp Phe His Tyr Val Thr Gly Met 1285 1290 1295	5689		
45	acc act gac aac gta aag tgc ccg tgt cag gtt ccg gcc ccc gaa ttc Thr Thr Asp Asn Val Lys Cys Pro Cys Gln Val Pro Ala Pro Glu Phe 1300 1305 1310	5737		
50	ttc aca gaa gtg gat ggg gtg ccg ttg cac agg tac gct cca gcg tgc Phe Thr Glu Val Asp Gly Val Arg Leu His Arg Tyr Ala Pro Ala Cys 1315 1320 1325	5785		
	aaa ccc ctc cta cgg gag gag gtc aca ttc ctg gtc ggg ctc aat caa Lys Pro Leu Leu Arg Glu Glu Val Thr Phe Leu Val Gly Leu Asn Gln 1330 1335 1340	5833		
55	tac ccg gtt ggg tca cag ctc cca tgc gag ccc gaa ctg gac gta gca Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Leu Asp Val Ala 1345 1350 1355 1360	5881		

	gtg ctc act tcc atg ctc acc gac ccc tcc cac att acg gcg gag acg	5929
	Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu Thr	
	1365 1370 1375	
5		
	gct aag cgt agg ctg gcc agg gga tct ccc ccc tcc ttg gcc agc tca	5977
	Ala Lys Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Leu Ala Ser Ser	
	1380 1385 1390	
10		
	tca gct agc cag ctg tct gcg cct tcc ttg aag gca aca tgc act acc	6025
	Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr Thr	
	1395 1400 1405	
15		
	cgt cat gac tcc ccg gac gct gac ctc atc gag gcc aac ctc ctg tgg	6073
	Arg His Asp Ser Pro Asp Ala Asp Leu Ile Glu Ala Asn Leu Leu Trp	
	1410 1415 1420	
20		
	cgg cag gag atg ggc ggg aac atc acc cgc gtg gag tca gag aat aag	6121
	Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn Lys	
	1425 1430 1435 1440	
25		
	gta gta att ttg gac tct ttc gag ccg ctc caa gcg gag gag gat gag	6169
	Val Val Ile Leu Asp Ser Phe Glu Pro Leu Gln Ala Glu Glu Asp Glu	
	1445 1450 1455	
30		
	agg gaa gta tcc gtt ccg gcg gag atc ctg ccg agg tcc agg aaa ttc	6217
	Arg Glu Val Ser Val Pro Ala Glu Ile Leu Arg Arg Ser Arg Lys Phe	
	1460 1465 1470	
35		
	cct cga gcg atg ccc ata tgg gca cgc ccg gat tac aac cct cca ctg	6265
	Pro Arg Ala Met Pro Ile Trp Ala Arg Pro Asp Tyr Asn Pro Pro Leu	
	1475 1480 1485	
40		
	tta gag tcc tgg aag gac ccg gac tac gtc cct cca gtg gta cac ggg	6313
	Leu Glu Ser Trp Lys Asp Pro Asp Tyr Val Pro Pro Val Val His Gly	
	1490 1495 1500	
45		
	tgt cca ttg ccg cct gcc aag gcc cct ccg ata cca cct cca ccg agg	6361
	Cys Pro Leu Pro Pro Ala Lys Ala Pro Pro Ile Pro Pro Pro Arg Arg	
	1505 1510 1515 1520	
50		
	aag agg acg gtt gtc ctg tca gaa tct acc gtg tct tct gcc ttg gcg	6409
	Lys Arg Thr Val Val Leu Ser Glu Ser Thr Val Ser Ser Ala Leu Ala	
	1525 1530 1535	
55		
	gag ctc gcc aca aag acc ttc ggc agc tcc gaa tcg tcg gcc gtc gac	6457
	Glu Leu Ala Thr Lys Thr Phe Gly Ser Ser Glu Ser Ser Ala Val Asp	
	1540 1545 1550	
60		
	agc ggc acg gca acg gcc tct cct gac cag ccc tcc gac gac ggc gac	6505
	Ser Gly Thr Ala Thr Ala Ser Pro Asp Gln Pro Ser Asp Asp Gly Asp	
	1555 1560 1565	
65		
	gcg gga tcc gac gtt gag tcg tac tcc tcc atg ccc ccc ctt gag ggg	6553
	Ala Gly Ser Asp Val Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu Gly	
	1570 1575 1580	

	gag ccg ggg gat ccc gat ctc agc gac ggg tct tgg tct acc gta agc	6601
	Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val Ser	
	1585 1590 1595 1600	
5	gag gag gct agt gag gac gtc gtc tgc tgc tcg atg tcc tac aca tgg	6649
	Glu Glu Ala Ser Glu Asp Val Val Cys Cys Ser Met Ser Tyr Thr Trp	
	1605 1610 1615	
10	aca ggc gcc ctg atc acg cca tgc gct gcg gag gaa acc aag ctg ccc	6697
	Thr Gly Ala Leu Ile Thr Pro Cys Ala Ala Glu Glu Thr Lys Leu Pro	
	1620 1625 1630	
15	atc aat gca ctg agc aac tct ttg ctc cgt cac cac aac ttg gtc tat	6745
	Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu Val Tyr	
	1635 1640 1645	
20	gct aca aca tct cgc agc gca agc ctg cgg cag aag aag gtc acc ttt	6793
	Ala Thr Thr Ser Arg Ser Ala Ser Leu Arg Gln Lys Lys Val Thr Phe	
	1650 1655 1660	
25	gac aga ctg cag gtc ctg gac gac cac tac cgg gac gtg ctc aag gag	6841
	Asp Arg Leu Gln Val Leu Asp Asp His Tyr Arg Asp Val Leu Lys Glu	
	1665 1670 1675 1680	
30	atg aag gcg aag gcg tcc aca gtt aag gct aaa ctt cta tcc gtg gag	6889
	Met Lys Ala Lys Ala Ser Thr Val Lys Ala Lys Leu Leu Ser Val Glu	
	1685 1690 1695	
35	gaa gcc tgt aag ctg acg ccc cca cat tcg gcc aga tct aaa ttt ggc	6937
	Glu Ala Cys Lys Leu Thr Pro Pro His Ser Ala Arg Ser Lys Phe Gly	
	1700 1705 1710	
40	tat ggg gca aag gac gtc cgg aac cta tcc agc aag gcc gtt aac cac	6985
	Tyr Gly Ala Lys Asp Val Arg Asn Leu Ser Ser Lys Ala Val Asn His	
	1715 1720 1725	
45	atc cgc tcc gtg tgg aag gac ttg ctg gaa gac act gag aca cca att	7033
	Ile Arg Ser Val Trp Lys Asp Leu Leu Glu Asp Thr Glu Thr Pro Ile	
	1730 1735 1740	
50	gac acc acc atc atg gca aaa aat gag gtt ttc tgc gtc caa cca gag	7081
	Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln Pro Glu	
	1745 1750 1755 1760	
55	aag ggg ggc cgc aag cca gct cgc ctt atc gta ttc cca gat ttg ggg	7129
	Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp Leu Gly	
	1765 1770 1775	
60	gtt cgt gtg tgc gag aaa atg gcc ctt tac gat gtg gtc tcc acc ctc	7177
	Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Ser Thr Leu	
	1780 1785 1790	
65	cct cag gcc gtg atg ggc tct tca tac gga ttc caa tac tct cct gga	7225
	Pro Gln Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser Pro Gly	
	1795 1800 1805	
70	cag cgg gtc gag ttc ctg gtg aat gcc tgg aaa gcg aag aaa tgc cct	7273

	Gln	Arg	Val	Glu	Phe	Leu	Val	Asn	Ala	Trp	Lys	Ala	Lys	Lys	Cys	Pro	
	1810						1815					1820					
5	atg	ggc	ttc	gca	tat	gac	acc	cgc	tgt	ttt	gac	tca	acg	gtc	act	gag	7321
	Met	Gly	Phe	Ala	Tyr	Asp	Thr	Arg	Cys	Phe	Asp	Ser	Thr	Val	Thr	Glu	
	1825					1830					1835					1840	
10	aat	gac	atc	cgt	gtt	gag	gag	tca	atc	tac	caa	tgt	tgt	gac	ttg	gcc	7369
	Asn	Asp	Ile	Arg	Val	Glu	Glu	Ser	Ile	Tyr	Gln	Cys	Cys	Asp	Leu	Ala	
					1845					1850					1855		
15	ccc	gaa	gcc	aga	cag	gcc	ata	agg	tcg	ctc	aca	gag	cgg	ctt	tac	atc	7417
	Pro	Glu	Ala	Arg	Gln	Ala	Ile	Arg	Ser	Leu	Thr	Glu	Arg	Leu	Tyr	Ile	
				1860					1865					1870			
20	ggg	ggc	ccc	ctg	act	aat	tct	aaa	ggg	cag	aac	tgc	ggc	tat	cgc	cgg	7465
	Gly	Gly	Pro	Leu	Thr	Asn	Ser	Lys	Gly	Gln	Asn	Cys	Gly	Tyr	Arg	Arg	
			1875					1880					1885				
25	tgc	cgc	gcg	agc	ggt	gta	ctg	acg	acc	agc	tgc	ggt	aat	acc	ctc	aca	7513
	Cys	Arg	Ala	Ser	Gly	Val	Leu	Thr	Thr	Ser	Cys	Gly	Asn	Thr	Leu	Thr	
	1890						1895					1900					
30	tgt	tac	ttg	aag	gcc	gct	gcg	gcc	tgt	cga	gct	gcg	aag	ctc	cag	gac	7561
	Cys	Tyr	Leu	Lys	Ala	Ala	Ala	Ala	Cys	Arg	Ala	Ala	Lys	Leu	Gln	Asp	
	1905					1910				1915						1920	
35	tgc	acg	atg	ctc	gta	tgc	gga	gac	gac	ctt	gtc	gtt	atc	tgt	gaa	agc	7609
	Cys	Thr	Met	Leu	Val	Cys	Gly	Asp	Asp	Leu	Val	Val	Ile	Cys	Glu	Ser	
					1925					1930					1935		
40	gcg	ggg	acc	caa	gag	gac	gag	gcg	agc	cta	cgg	gcc	ttc	acg	gag	gct	7657
	Ala	Gly	Thr	Gln	Glu	Asp	Glu	Ala	Ser	Leu	Arg	Ala	Phe	Thr	Glu	Ala	
				1940					1945					1950			
45	atg	act	aga	tac	tct	gcc	ccc	cct	ggg	gac	ccg	ccc	aaa	cca	gaa	tac	7705
	Met	Thr	Arg	Tyr	Ser	Ala	Pro	Pro	Gly	Asp	Pro	Pro	Lys	Pro	Glu	Tyr	
			1955					1960					1965				
50	gac	ttg	gag	ttg	ata	aca	tca	tgc	tcc	tcc	aat	gtg	tca	gtc	gcg	cac	7753
	Asp	Leu	Glu	Leu	Ile	Thr	Ser	Cys	Ser	Ser	Asn	Val	Ser	Val	Ala	His	
	1970						1975					1980					
55	gat	gca	tct	ggc	aaa	agg	gtg	tac	tat	ctc	acc	cgt	gac	ccc	acc	acc	7801
	Asp	Ala	Ser	Gly	Lys	Arg	Val	Tyr	Tyr	Leu	Thr	Arg	Asp	Pro	Thr	Thr	
	1985					1990					1995					2000	
60	ccc	ctt	gcg	cgg	gct	gcg	tgg	gag	aca	gct	aga	cac	act	cca	gtc	aat	7849
	Pro	Leu	Ala	Arg	Ala	Ala	Trp	Glu	Thr	Ala	Arg	His	Thr	Pro	Val	Asn	
					2005					2010					2015		
65	tcc	tgg	cta	ggc	aac	atc	atc	atg	tat	gcg	ccc	acc	ttg	tgg	gca	agg	7897
	Ser	Trp	Leu	Gly	Asn	Ile	Ile	Met	Tyr	Ala	Pro	Thr	Leu	Trp	Ala	Arg	
				2020					2025					2030			
70	atg	atc	ctg	atg	act	cat	ttc	ttc	tcc	atc	ctt	cta	gct	cag	gaa	caa	7945
	Met	Ile	Leu	Met	Thr	His	Phe	Phe	Ser	Ile	Leu	Leu	Ala	Gln	Glu	Gln	

	2035	2040	2045	
5	ctt gaa aaa gcc cta gat tgt cag atc tac ggg gcc tgt tac tcc att Leu Glu Lys Ala Leu Asp Cys Gln Ile Tyr Gly Ala Cys Tyr Ser Ile 2050 2055 2060			7993
10	gag cca ctt gac cta cct cag atc att caa cga ctc cac ggc ctt agc Glu Pro Leu Asp Leu Pro Gln Ile Ile Gln Arg Leu His Gly Leu Ser 2065 2070 2075 2080			8041
	gca ttt tca ctc cat agt tac tct cca ggt gag atc aat agg gtg gct Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg Val Ala 2085 2090 2095			8089
15	tca tgc ctc agg aaa ctt ggg gta ccg ccc ttg cga gtc tgg aga cat Ser Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Val Trp Arg His 2100 2105 2110			8137
20	cgg gcc aga agt gtc cgc gct agg cta ctg tcc cag ggg ggg agg gct Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ser Gln Gly Gly Arg Ala 2115 2120 2125			8185
25	gcc act tgt ggc aag tac ctc ttc aac tgg gca gta agg acc aag ctc Ala Thr Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr Lys Leu 2130 2135 2140			8233
30	aaa ctc act cca atc ccg gct gcg tcc cag ttg gat tta tcc agc tgg Lys Leu Thr Pro Ile Pro Ala Ala Ser Gln Leu Asp Leu Ser Ser Trp 2145 2150 2155 2160			8281
	ttc gtt gct ggt tac agc ggg gga gac ata tat cac agc ctg tct cgt Phe Val Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Leu Ser Arg 2165 2170 2175			8329
35	gcc cga ccc cgc tgg ttc atg tgg tgc cta ctc cta ctt tct gta ggg Ala Arg Pro Arg Trp Phe Met Trp Cys Leu Leu Leu Leu Ser Val Gly 2180 2185 2190			8377
40	gta ggc atc tat cta ctc ccc aac cga tga acggggagct aaacactcca Val Gly Ile Tyr Leu Leu Pro Asn Arg * 2195 2200			8427
45	ggccaatagg ccatacctggt tttttccctt tttttttttc tttttttttt tttttttttt tttttttttt ttttctcctt tttttttcct ctttttttcc ttttctttcc tttggtggct ccatcttagc cctagtcacg gctagctgtg aaaggtccgt gagccgcttg actgcagaga gtgctgatac tggcctctct gcagatcaag t			8487 8547 8607 8638
50	<210> 26 <211> 7 <212> DNA <213> HCV			
55	<400> 26 gccagcc			7
	<210> 27 <211> 6			

```

<212> RNA
<213> HCV

<400> 27
5 gccagc 6

<210> 28
<211> 14
<212> DNA
10 <213> HCV

<400> 28
cgcgcccaga tggt 14

15 <210> 29
<211> 6
<212> DNA
<213> E.coli

20 <400> 29
gaattc 6

<210> 30
<211> 9605
25 <212> DNA
<213> HCV

<220>
<221> CDS
30 <222> (342)...(9374)

<400> 30
gccagcccc gattgggggc gacactccac catagatcac tcccctgtga ggaactactg 60
tcttcacgca gaaagcgtct agccatggcg ttagtatgag tgtcgtgcag cctccaggac 120
35 cccccctccc gggagagcca tagtggtctg cggaaccggt gagtacaccg gaattgccag 180
gacgaccggg tcctttcttg gatcaaccgg ctcaatgcct ggagatttgg gcgtgcccc 240
gcgagactgc tagccgagta gtgttgggtc gcgaaaggcc ttgtgttact gcctgatagg 300
gtgcttgcca gtgccccggg aggtctcgta gaccgtgcac c atg agc acg aat cct 356
Met Ser Thr Asn Pro
40 1 5

aaa cct caa aga aaa acc aaa cgt aac acc aac cgc cgc cca cag gac 404
Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp
10 15 20

45 gtc aag ttc ccg ggc ggt ggt cag atc gtc ggt gga gtt tac ctg ttg 452
Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val Tyr Leu Leu
25 30 35

50 ccg cgc agg ggc ccc agg ttg ggt gtg cgc gcg act agg aag act tcc 500
Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala Thr Arg Lys Thr Ser
40 45 50

55 gag cgg tcg caa cct cgt gga agg cga caa cct atc ccc aag gct cgc 548
Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro Ile Pro Lys Ala Arg
55 60 65

```

	cag ccc gag ggt agg gcc tgg gct cag ccc ggg tac ccc tgg ccc ctc	596
	Gln Pro Glu Gly Arg Ala Trp Ala Gln Pro Gly Tyr Pro Trp Pro Leu	
	70 75 80 85	
5	tat ggc aat gag ggc ttg ggg tgg gca gga tgg ctc ctg tca ccc cgt	644
	Tyr Gly Asn Glu Gly Leu Gly Trp Ala Gly Trp Leu Leu Ser Pro Arg	
	90 95 100	
10	ggc tct cgg cct agt tgg ggc ccc acg gac ccc cgg cgt agg tcg cgc	692
	Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro Arg Arg Arg Ser Arg	
	105 110 115	
15	aat ttg ggt aag gtc atc gat acc ctc acg tgc ggc ttc gcc gat ctc	740
	Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys Gly Phe Ala Asp Leu	
	120 125 130	
20	atg ggg tac att ccg ctc gtc ggc gcc ccc cta ggg ggc gct gcc agg	788
	Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu Gly Gly Ala Ala Arg	
	135 140 145	
25	gcc ctg gcg cat ggc gtc cgg gtt ctg gag gac ggc gtg aac tat gca	836
	Ala Leu Ala His Gly Val Arg Val Leu Glu Asp Gly Val Asn Tyr Ala	
	150 155 160 165	
30	aca ggg aat ctg ccc ggt tgc tcc ttt tct atc ttc ctt ttg gct ttg	884
	Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu	
	170 175 180	
35	ctg tcc tgt ttg acc atc cca gct tcc gct tat gaa gtg cgc aac gta	932
	Leu Ser Cys Leu Thr Ile Pro Ala Ser Ala Tyr Glu Val Arg Asn Val	
	185 190 195	
40	tcc gga gtg tac cat gtc acg aac gac tgc tcc aac gca agc att gtg	980
	Ser Gly Val Tyr His Val Thr Asn Asp Cys Ser Asn Ala Ser Ile Val	
	200 205 210	
45	tat gag gca gcg gac atg atc atg cat acc ccc ggg tgc gtg ccc tgc	1028
	Tyr Glu Ala Ala Asp Met Ile Met His Thr Pro Gly Cys Val Pro Cys	
	215 220 225	
50	gtt cgg gag aac aac tcc tcc cgc tgc tgg gta gcg ctc act ccc acg	1076
	Val Arg Glu Asn Asn Ser Ser Arg Cys Trp Val Ala Leu Thr Pro Thr	
	230 235 240 245	
55	ctc gcg gcc agg aac gct agc gtc ccc act acg acg ata cga cgc cat	1124
	Leu Ala Ala Arg Asn Ala Ser Val Pro Thr Thr Thr Ile Arg Arg His	
	250 255 260	
60	gtc gat ttg ctc gtt ggg gcg gct gct ctc tgc tcc gct atg tac gtg	1172
	Val Asp Leu Leu Val Gly Ala Ala Ala Leu Cys Ser Ala Met Tyr Val	
	265 270 275	
65	gga gat ctc tgc gga tct gtt ttc ctc gtc gcc cag ctg ttc acc ttc	1220
	Gly Asp Leu Cys Gly Ser Val Phe Leu Val Ala Gln Leu Phe Thr Phe	
	280 285 290	
70	tcg cct cgc cgg cac gag aca gta cag gac tgc aat tgc tca ata tat	1268

	Ser	Pro	Arg	Arg	His	Glu	Thr	Val	Gln	Asp	Cys	Asn	Cys	Ser	Ile	Tyr	
	295						300					305					
5	ccc	ggc	cac	gtg	aca	ggt	cac	cgt	atg	gct	tgg	gat	atg	atg	atg	aac	1316
	Pro	Gly	His	Val	Thr	Gly	His	Arg	Met	Ala	Trp	Asp	Met	Met	Met	Asn	
	310					315					320					325	
10	tgg	tca	cct	aca	gca	gcc	cta	gtg	gta	tcg	cag	tta	ctc	cg	atc	cca	1364
	Trp	Ser	Pro	Thr	Ala	Ala	Leu	Val	Val	Ser	Gln	Leu	Leu	Arg	Ile	Pro	
					330					335					340		
15	caa	gct	gtc	gtg	gat	atg	gtg	gcg	ggg	gcc	cat	tgg	gga	gtc	cta	gcg	1412
	Gln	Ala	Val	Val	Asp	Met	Val	Ala	Gly	Ala	His	Trp	Gly	Val	Leu	Ala	
				345					350					355			
20	ggc	ctt	gcc	tac	tat	tcc	atg	gtg	ggg	aac	tgg	gct	aag	ggt	ctg	att	1460
	Gly	Leu	Ala	Tyr	Tyr	Ser	Met	Val	Gly	Asn	Trp	Ala	Lys	Val	Leu	Ile	
			360					365					370				
25	gtg	atg	cta	ctc	ttt	gcc	ggc	gtt	gac	ggg	gga	acc	tat	gtg	aca	ggg	1508
	Val	Met	Leu	Leu	Phe	Ala	Gly	Val	Asp	Gly	Gly	Thr	Tyr	Val	Thr	Gly	
		375					380					385					
30	ggg	acg	atg	gcc	aaa	aac	acc	ctc	ggg	att	acg	tcc	ctc	ttt	tca	ccc	1556
	Gly	Thr	Met	Ala	Lys	Asn	Thr	Leu	Gly	Ile	Thr	Ser	Leu	Phe	Ser	Pro	
	390					395				400						405	
35	ggg	tca	tcc	cag	aaa	atc	cag	ctt	gta	aac	acc	aac	ggc	agc	tgg	cac	1604
	Gly	Ser	Ser	Gln	Lys	Ile	Gln	Leu	Val	Asn	Thr	Asn	Gly	Ser	Trp	His	
				410					415						420		
40	atc	aac	agg	act	gcc	ctg	aac	tgc	aat	gac	tcc	ctc	aac	act	ggg	ttc	1652
	Ile	Asn	Arg	Thr	Ala	Leu	Asn	Cys	Asn	Asp	Ser	Leu	Asn	Thr	Gly	Phe	
				425					430					435			
45	ctt	gct	gcg	ctg	ttc	tac	gtg	cac	aag	ttc	aac	tca	tct	gga	tgc	cca	1700
	Leu	Ala	Ala	Leu	Phe	Tyr	Val	His	Lys	Phe	Asn	Ser	Ser	Gly	Cys	Pro	
			440					445					450				
50	gag	cgc	atg	gcc	agc	tgc	agc	ccc	atc	gac	gcg	ttc	gct	cag	ggg	tgg	1748
	Glu	Arg	Met	Ala	Ser	Cys	Ser	Pro	Ile	Asp	Ala	Phe	Ala	Gln	Gly	Trp	
		455					460				465						
55	ggg	ccc	atc	act	tac	aat	gag	tca	cac	agc	tcg	gac	cag	agg	cct	tat	1796
	Gly	Pro	Ile	Thr	Tyr	Asn	Glu	Ser	His	Ser	Ser	Asp	Gln	Arg	Pro	Tyr	
	470					475					480					485	
60	tgt	tgg	cac	tac	gca	ccc	cgg	ccg	tgc	ggt	atc	gta	ccc	gcg	gcg	cag	1844
	Cys	Trp	His	Tyr	Ala	Pro	Arg	Pro	Cys	Gly	Ile	Val	Pro	Ala	Ala	Gln	
					490					495				500			
65	gtg	tgt	ggt	cca	gtg	tac	tgc	ttc	acc	cca	agc	cct	gtc	gtg	gtg	ggg	1892
	Val	Cys	Gly	Pro	Val	Tyr	Cys	Phe	Thr	Pro	Ser	Pro	Val	Val	Val	Gly	
				505					510					515			
70	acg	acc	gac	cgg	ttc	ggc	gtc	cct	acg	tac	agt	tgg	ggg	gag	aat	gag	1940
	Thr	Thr	Asp	Arg	Phe	Gly	Val	Pro	Thr	Tyr	Ser	Trp	Gly	Glu	Asn	Glu	

	520	525	530	
5	acg gac gtg ctg ctt ctt Thr Asp Val Leu Leu Leu 535	aac aac acg cgg ccg ccg Asn Asn Thr Arg Pro Pro 540	caa ggc aac tgg Gln Gly Asn Trp 545	1988
10	ttt ggc tgt aca tgg atg aat agc act ggg ttc acc aag acg tgc ggg Phe Gly Cys Thr Trp Met Asn Ser Thr Gly Phe Thr Lys Thr Cys Gly 550 555 560 565			2036
	ggc ccc ccg tgt aac atc ggg ggg atc ggc aat aaa acc ttg acc tgc Gly Pro Pro Cys Asn Ile Gly Gly Ile Gly Asn Lys Thr Leu Thr Cys 570 575 580			2084
15	ccc acg gac tgc ttc cgg aag cac ccc gag gcc act tac acc aag tgt Pro Thr Asp Cys Phe Arg Lys His Pro Glu Ala Thr Tyr Thr Lys Cys 585 590 595			2132
20	ggt tcg ggg cct tgg ttg aca ccc aga tgc ttg gtc cac tac cca tac Gly Ser Gly Pro Trp Leu Thr Pro Arg Cys Leu Val His Tyr Pro Tyr 600 605 610			2180
25	agg ctt tgg cac tac ccc tgc act gtc aac ttt acc atc ttc aag gtt Arg Leu Trp His Tyr Pro Cys Thr Val Asn Phe Thr Ile Phe Lys Val 615 620 625			2228
30	agg atg tac gtg ggg gga gtg gag cac agg ctc gaa gcc gca tgc aat Arg Met Tyr Val Gly Gly Val Glu His Arg Leu Glu Ala Ala Cys Asn 630 635 640 645			2276
	tgg act cga gga gag cgt tgt aac ctg gag gac agg gac aga tca gag Trp Thr Arg Gly Glu Arg Cys Asn Leu Glu Asp Arg Asp Arg Ser Glu 650 655 660			2324
35	ctt agc ccg ctg ctg ctg tct aca acg gag tgg cag gta ttg ccc tgt Leu Ser Pro Leu Leu Leu Ser Thr Thr Glu Trp Gln Val Leu Pro Cys 665 670 675			2372
40	tcc ttc acc acc cta ccg gct ctg tcc act ggt ttg atc cat ctc cat Ser Phe Thr Thr Leu Pro Ala Leu Ser Thr Gly Leu Ile His Leu His 680 685 690			2420
45	cag aac gtc gtg gac gta caa tac ctg tac ggt ata ggg tcg gcg gtt Gln Asn Val Val Asp Val Gln Tyr Leu Tyr Gly Ile Gly Ser Ala Val 695 700 705			2468
50	gtc tcc ttt gca atc aaa tgg gag tat gtc ctg ttg ctc ttc ctt ctt Val Ser Phe Ala Ile Lys Trp Glu Tyr Val Leu Leu Leu Phe Leu Leu 710 715 720 725			2516
	ctg gcg gac gcg cgc gtc tgt gcc tgc ttg tgg atg atg ctg ctg ata Leu Ala Asp Ala Arg Val Cys Ala Cys Leu Trp Met Met Leu Leu Ile 730 735 740			2564
55	gct caa gct gag gcc gcc cta gag aac ctg gtg gtc ctc aac gcg gca Ala Gln Ala Glu Ala Ala Leu Glu Asn Leu Val Val Leu Asn Ala Ala 745 750 755			2612

	tcc	gtg	gcc	ggg	gcg	cat	ggc	att	ctc	tcc	ttc	ctc	gtg	ttc	ttc	tgt	2660
	Ser	Val	Ala	Gly	Ala	His	Gly	Ile	Leu	Ser	Phe	Leu	Val	Phe	Phe	Cys	
			760					765					770				
5	gct	gcc	tgg	tac	atc	aag	ggc	agg	ctg	gtc	cct	ggg	gcg	gca	tat	gcc	2708
	Ala	Ala	Trp	Tyr	Ile	Lys	Gly	Arg	Leu	Val	Pro	Gly	Ala	Ala	Tyr	Ala	
		775					780					785					
10	ctc	tac	ggc	gta	tgg	ccg	cta	ctc	ctg	ctc	ctg	ctg	gcg	tta	cca	cca	2756
	Leu	Tyr	Gly	Val	Trp	Pro	Leu	Leu	Leu	Leu	Leu	Leu	Ala	Leu	Pro	Pro	
		790				795					800					805	
15	cga	gca	tac	gcc	atg	gac	cgg	gag	atg	gca	gca	tcg	tgc	gga	ggc	gcg	2804
	Arg	Ala	Tyr	Ala	Met	Asp	Arg	Glu	Met	Ala	Ala	Ser	Cys	Gly	Gly	Ala	
					810					815					820		
20	gtt	ttc	gta	ggg	ctg	ata	ctc	ttg	acc	ttg	tca	ccg	cac	tat	aag	ctg	2852
	Val	Phe	Val	Gly	Leu	Ile	Leu	Leu	Thr	Leu	Ser	Pro	His	Tyr	Lys	Leu	
				825					830					835			
25	ttc	ctc	gct	agg	ctc	ata	tgg	tgg	tta	caa	tat	ttt	atc	acc	agg	gcc	2900
	Phe	Leu	Ala	Arg	Leu	Ile	Trp	Trp	Leu	Gln	Tyr	Phe	Ile	Thr	Arg	Ala	
			840					845					850				
30	gag	gca	cac	ttg	caa	gtg	tgg	atc	ccc	ccc	ctc	aac	gtt	cgg	ggg	ggc	2948
	Glu	Ala	His	Leu	Gln	Val	Trp	Ile	Pro	Pro	Leu	Asn	Val	Arg	Gly	Gly	
		855					860					865					
35	cgc	gat	gcc	gtc	atc	ctc	ctc	acg	tgc	gcg	atc	cac	cca	gag	cta	atc	2996
	Arg	Asp	Ala	Val	Ile	Leu	Leu	Thr	Cys	Ala	Ile	His	Pro	Glu	Leu	Ile	
		870				875					880					885	
40	ttt	acc	atc	acc	aaa	atc	ttg	ctc	gcc	ata	ctc	ggg	cca	ctc	atg	gtg	3044
	Phe	Thr	Ile	Thr	Lys	Ile	Leu	Leu	Ala	Ile	Leu	Gly	Pro	Leu	Met	Val	
					890					895					900		
45	ctc	cag	gct	ggg	ata	acc	aaa	gtg	ccg	tac	ttc	gtg	cgc	gca	cac	ggg	3092
	Leu	Gln	Ala	Gly	Ile	Thr	Lys	Val	Pro	Tyr	Phe	Val	Arg	Ala	His	Gly	
				905					910					915			
50	ctc	att	cgt	gca	tgc	atg	ctg	gtg	cgg	aag	gtt	gct	ggg	ggg	cat	tat	3140
	Leu	Ile	Arg	Ala	Cys	Met	Leu	Val	Arg	Lys	Val	Ala	Gly	Gly	His	Tyr	
			920					925					930				
55	gtc	caa	atg	gct	ctc	atg	aag	ttg	gcc	gca	ctg	aca	ggg	acg	tac	gtt	3188
	Val	Gln	Met	Ala	Leu	Met	Lys	Leu	Ala	Ala	Leu	Thr	Gly	Thr	Tyr	Val	
		935					940					945					
60	tat	gac	cat	ctc	acc	cca	ctg	cgg	gac	tgg	gcc	cac	gcg	ggc	cta	cga	3236
	Tyr	Asp	His	Leu	Thr	Pro	Leu	Arg	Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	
		950				955					960					965	
65	gac	ctt	gcg	gtg	gca	gtt	gag	ccc	gtc	gtc	ttc	tct	gat	atg	gag	acc	3284
	Asp	Leu	Ala	Val	Ala	Val	Glu	Pro	Val	Val	Phe	Ser	Asp	Met	Glu	Thr	
				970						975						980	

	aag gtt atc acc tgg ggg gca gac acc gcg gcg tgt ggg gac atc atc	3332
	Lys Val Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile	
	985 990 995	
5	ttg ggc ctg ccc gtc tcc gcc cgc agg ggg agg gag ata cat ctg gga	3380
	Leu Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile His Leu Gly	
	1000 1005 1010	
10	ccg gca gac agc ctt gaa ggg cag ggg tgg cga ctc ctc gcg cct att	3428
	Pro Ala Asp Ser Leu Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile	
	1015 1020 1025	
15	acg gcc tac tcc caa cag acg cga ggc cta ctt ggc tgc atc atc act	3476
	Thr Ala Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr	
	1030 1035 1040 1045	
20	agc ctc aca ggc cgg gac agg aac cag gtc gag ggg gag gtc caa gtg	3524
	Ser Leu Thr Gly Arg Asp Arg Asn Gln Val Glu Gly Glu Val Gln Val	
	1050 1055 1060	
25	gtc tcc acc gca aca caa tct ttc ctg gcg acc tgc gtc aat ggc gtg	3572
	Val Ser Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val	
	1065 1070 1075	
30	tgt tgg act gtc tat cat ggt gcc ggc tca aag acc ctt gcc ggc cca	3620
	Cys Trp Thr Val Tyr His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro	
	1080 1085 1090	
35	aag ggc cca atc acc caa atg tac acc aat gtg gac cag gac ctc gtc	3668
	Lys Gly Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val	
	1095 1100 1105	
40	ggc tgg caa gcg ccc ccc ggg gcg cgt tcc ttg aca cca tgc acc tgc	3716
	Gly Trp Gln Ala Pro Pro Gly Ala Arg Ser Leu Thr Pro Cys Thr Cys	
	1110 1115 1120 1125	
45	ggc agc tcg gac ctt tac ttg gtc acg agg cat gcc gat gtc att ccg	3764
	Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro	
	1130 1135 1140	
50	gtg cgc cgg cgg ggc gac agc agg ggg agc cta ctc tcc ccc agg ccc	3812
	Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro	
	1145 1150 1155	
55	gtc tcc tac ttg aag ggc tct tcg ggc ggt cca ctg ctc tgc ccc tcg	3860
	Val Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser	
	1160 1165 1170	
60	ggg cac gct gtg ggc atc ttt cgg gct gcc gtg tgc acc cga ggg gtt	3908
	Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val	
	1175 1180 1185	
65	gcg aag gcg gtg gac ttt gta ccc gtc gag tct atg gaa acc act atg	3956
	Ala Lys Ala Val Asp Phe Val Pro Val Glu Ser Met Glu Thr Thr Met	
	1190 1195 1200 1205	
70	cgg tcc ccg gtc ttc acg gac aac tcg tcc cct ccg gcc gta ccg cag	4004

	Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro Gln	
	1210 1215 1220	
5	aca ttc cag gtg gcc cat cta cac gcc cct act ggt agc ggc aag agc Thr Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser Gly Lys Ser	4052
	1225 1230 1235	
10	act aag gtg ccg gct gcg tat gca gcc caa ggg tat aag gtg ctt gtc Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val	4100
	1240 1245 1250	
15	ctg aac ccg tcc gtc gcc gcc acc cta ggt ttc ggg gcg tat atg tct Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser	4148
	1255 1260 1265	
	aag gca cat ggt atc gac cct aac atc aga acc ggg gta agg acc atc Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile	4196
	1270 1275 1280 1285	
20	acc acg ggt gcc ccc atc acg tac tcc acc tat ggc aag ttt ctt gcc Thr Thr Gly Ala Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala	4244
	1290 1295 1300	
25	gac ggt ggt tgc tct ggg ggc gcc tat gac atc ata ata tgt gat gag Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu	4292
	1305 1310 1315	
30	tgc cac tca act gac tcg acc act atc ctg ggc atc ggc aca gtc ctg Cys His Ser Thr Asp Ser Thr Thr Ile Leu Gly Ile Gly Thr Val Leu	4340
	1320 1325 1330	
35	gac caa gcg gag acg gct gga gcg cga ctc gtc gtg ctc gcc acc gct Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala	4388
	1335 1340 1345	
	acg cct ccg gga tcg gtc acc gtg cca cat cca aac atc gag gag gtg Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val	4436
	1350 1355 1360 1365	
40	gct ctg tcc agc act gga gaa atc ccc ttt tat ggc aaa gcc atc ccc Ala Leu Ser Ser Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro	4484
	1370 1375 1380	
45	atc gag acc atc aag ggg ggg agg cac ctc att ttc tgc cat tcc aag Ile Glu Thr Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys	4532
	1385 1390 1395	
50	aag aaa tgt gat gag ctc gcc gcg aag ctg tcc ggc ctc gga ctc aat Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Ser Gly Leu Gly Leu Asn	4580
	1400 1405 1410	
55	gct gta gca tat tac cgg ggc ctt gat gta tcc gtc ata cca act agc Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser	4628
	1415 1420 1425	
	gga gac gtc att gtc gta gca acg gac gct cta atg acg ggc ttt acc Gly Asp Val Ile Val Val Ala Thr Asp Ala Leu Met Thr Gly Phe Thr	4676

	1430	1435	1440	1445	
5	ggc gat ttc gac tca gtg atc gac tgc aat aca tgt gtc acc cag aca Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr	1450	1455	1460	4724
10	gtc gac ttc agc ctg gac ccg acc ttc acc att gag acg acg acc gtg Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Thr Thr Val	1465	1470	1475	4772
15	cca caa gac gcg gtg tca cgc tcg cag cgg cga ggc agg act ggt agg Pro Gln Asp Ala Val Ser Arg Ser Gln Arg Arg Gly Arg Thr Gly Arg	1480	1485	1490	4820
20	ggc agg atg ggc att tac agg ttt gtg act cca gga gaa cgg ccc tcg Gly Arg Met Gly Ile Tyr Arg Phe Val Thr Pro Gly Glu Arg Pro Ser	1495	1500	1505	4868
25	ggc atg ttc gat tcc tcg gtt ctg tgc gag tgc tat gac gcg ggc tgt Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys	1510	1515	1520	4916
30	gct tgg tac gag ctc acg ccc gcc gag acc tca gtt agg ttg cgg gct Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Ser Val Arg Leu Arg Ala	1530	1535	1540	4964
35	tac cta aac aca cca ggg ttg ccc gtc tgc cag gac cat ctg gag ttc Tyr Leu Asn Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe	1545	1550	1555	5012
40	tgg gag agc gtc ttt aca ggc ctc acc cac ata gac gcc cat ttc ttg Trp Glu Ser Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu	1560	1565	1570	5060
45	tcc cag act aag cag gca gga gac aac ttc ccc tac ctg gta gca tac Ser Gln Thr Lys Gln Ala Gly Asp Asn Phe Pro Tyr Leu Val Ala Tyr	1575	1580	1585	5108
50	cag gct acg gtg tgc gcc agg gct cag gct cca cct cca tcg tgg gac Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp	1590	1595	1600	5156
55	caa atg tgg aag tgt ctc ata cgg cta aag cct acg ctg cac ggg cca Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro	1610	1615	1620	5204
60	acg ccc ctg ctg tat agg ctg gga gcc gtt caa aac gag gtt act acc Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Val Thr Thr	1625	1630	1635	5252
65	aca cac ccc ata acc aaa tac atc atg gca tgc atg tcg gct gac ctg Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys Met Ser Ala Asp Leu	1640	1645	1650	5300
70	gag gtc gtc acg agc acc tgg gtg ctg gta ggc gga gtc cta gca gct Glu Val Val Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala	1655	1660	1665	5348

	ctg gcc gcg tat tgc ctg aca aca ggc agc gtg gtc att gtg ggc agg	5396
	Leu Ala Ala Tyr Cys Leu Thr Thr Gly Ser Val Val Ile Val Gly Arg	
	1670 1675 1680 1685	
5	atc atc ttg tcc gga aag ccg gcc atc att ccc gac agg gaa gtc ctt	5444
	Ile Ile Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu	
	1690 1695 1700	
10	tac cgg gag ttc gat gag atg gaa gag tgc gcc tca cac ctc cct tac	5492
	Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys Ala Ser His Leu Pro Tyr	
	1705 1710 1715	
15	atc gaa cag gga atg cag ctc gcc gaa caa ttc aaa cag aag gca atc	5540
	Ile Glu Gln Gly Met Gln Leu Ala Glu Gln Phe Lys Gln Lys Ala Ile	
	1720 1725 1730	
20	ggg ttg ctg caa aca gcc acc aag caa gcg gag gct gct gct ccc gtg	5588
	Gly Leu Leu Gln Thr Ala Thr Lys Gln Ala Glu Ala Ala Ala Pro Val	
	1735 1740 1745	
25	gtg gaa tcc aag tgg cgg acc ctc gaa gcc ttc tgg gcg aag cat atg	5636
	Val Glu Ser Lys Trp Arg Thr Leu Glu Ala Phe Trp Ala Lys His Met	
	1750 1755 1760 1765	
30	tgg aat ttc atc agc ggg ata caa tat tta gca ggc ttg tcc act ctg	5684
	Trp Asn Phe Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu	
	1770 1775 1780	
35	cct ggc aac ccc gcg ata gca tca ctg atg gca ttc aca gcc tct atc	5732
	Pro Gly Asn Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ser Ile	
	1785 1790 1795	
40	acc agc ccg ctc acc acc caa cat acc ctc ctg ttt aac atc ctg ggg	5780
	Thr Ser Pro Leu Thr Thr Gln His Thr Leu Leu Phe Asn Ile Leu Gly	
	1800 1805 1810	
45	gga tgg gtg gcc gcc caa ctt gct cct ccc agc gct gct tct gct ttc	5828
	Gly Trp Val Ala Ala Gln Leu Ala Pro Pro Ser Ala Ala Ser Ala Phe	
	1815 1820 1825	
50	gta ggc gcc ggc atc gct gga gcg gct gtt ggc agc ata ggc ctt ggg	5876
	Val Gly Ala Gly Ile Ala Gly Ala Ala Val Gly Ser Ile Gly Leu Gly	
	1830 1835 1840 1845	
55	aag gtg ctt gtg gat att ttg gca ggt tat gga gca ggg gtg gca ggc	5924
	Lys Val Leu Val Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly	
	1850 1855 1860	
60	gcg ctc gtg gcc ttt aag gtc atg agc ggc gag atg ccc tcc acc gag	5972
	Ala Leu Val Ala Phe Lys Val Met Ser Gly Glu Met Pro Ser Thr Glu	
	1865 1870 1875	
65	gac ctg gtt aac cta ctc cct gct atc ctc tcc cct ggc gcc cta gtc	6020
	Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val	
	1880 1885 1890	

	gtc ggg gtc gtg tgc gca gcg ata ctg cgt cgg cac gtg ggc cca ggg	6068
	Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly	
	1895 1900 1905	
5	gag ggg gct gtg cag tgg atg aac cgg ctg ata gcg ttc gct tcg cgg	6116
	Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg	
	1910 1915 1920 1925	
10	ggg aac cac gtc tcc ccc acg cac tat gtg cct gag agc gac gct gca	6164
	Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala	
	1930 1935 1940	
15	gca cgt gtc act cag atc ctc tct agt ctt acc atc act cag ctg ctg	6212
	Ala Arg Val Thr Gln Ile Leu Ser Ser Leu Thr Ile Thr Gln Leu Leu	
	1945 1950 1955	
20	aag agg ctt cac cag tgg atc aac gag gac tgc tcc acg cca tgc tcc	6260
	Lys Arg Leu His Gln Trp Ile Asn Glu Asp Cys Ser Thr Pro Cys Ser	
	1960 1965 1970	
25	ggc tcg tgg cta aga gat gtt tgg gat tgg ata tgc acg gtg ttg act	6308
	Gly Ser Trp Leu Arg Asp Val Trp Asp Trp Ile Cys Thr Val Leu Thr	
	1975 1980 1985	
30	gat ttc aag acc tgg ctc cag tcc aag ctc ctg ccg cga ttg ccg gga	6356
	Asp Phe Lys Thr Trp Leu Gln Ser Lys Leu Leu Pro Arg Leu Pro Gly	
	1990 1995 2000 2005	
35	gtc ccc ttc ttc tca tgt caa cgt ggg tac aag gga gtc tgg cgg ggc	6404
	Val Pro Phe Phe Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly	
	2010 2015 2020	
40	gac ggc atc atg caa acc acc tgc cca tgt gga gca cag atc acc gga	6452
	Asp Gly Ile Met Gln Thr Thr Cys Pro Cys Gly Ala Gln Ile Thr Gly	
	2025 2030 2035	
45	cat gtg aaa aac ggt tcc atg agg atc gtg ggg cct agg acc tgt agt	6500
	His Val Lys Asn Gly Ser Met Arg Ile Val Gly Pro Arg Thr Cys Ser	
	2040 2045 2050	
50	aac acg tgg cat gga aca ttc ccc att aac gcg tac acc acg ggc ccc	6548
	Asn Thr Trp His Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro	
	2055 2060 2065	
55	tgc acg ccc tcc ccg gcg cca aat tat tct agg gcg ctg tgg cgg gtg	6596
	Cys Thr Pro Ser Pro Ala Pro Asn Tyr Ser Arg Ala Leu Trp Arg Val	
	2070 2075 2080 2085	
60	gct gct gag gag tac gtg gag gtt acg cgg gtg ggg gat ttc cac tac	6644
	Ala Ala Glu Glu Tyr Val Glu Val Thr Arg Val Gly Asp Phe His Tyr	
	2090 2095 2100	
65	gtg acg ggc atg acc act gac aac gta aag tgc ccg tgt cag gtt ccg	6692
	Val Thr Gly Met Thr Thr Asp Asn Val Lys Cys Pro Cys Gln Val Pro	
	2105 2110 2115	
70	gcc ccc gaa ttc ttc aca gaa gtg gat ggg gtg cgg ttg cac agg tac	6740

	Ala	Pro	Glu	Phe	Phe	Thr	Glu	Val	Asp	Gly	Val	Arg	Leu	His	Arg	Tyr	
			2120					2125					2130				
5	gct	cca	gcg	tgc	aaa	ccc	ctc	cta	cgg	gag	gag	gtc	aca	ttc	ctg	gtc	6788
	Ala	Pro	Ala	Cys	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Thr	Phe	Leu	Val	
			2135					2140					2145				
10	ggg	ctc	aat	caa	tac	ctg	gtt	ggg	tca	cag	ctc	cca	tgc	gag	ccc	gaa	6836
	Gly	Leu	Asn	Gln	Tyr	Leu	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu	Pro	Glu	
			2150				2155					2160				2165	
15	ccg	gac	gta	gca	gtg	ctc	act	tcc	atg	ctc	acc	gac	ccc	tcc	cac	att	6884
	Pro	Asp	Val	Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser	His	Ile	
					2170						2175					2180	
	acg	gcg	gag	acg	gct	aag	cgt	agg	ctg	gcc	agg	gga	tct	ccc	ccc	tcc	6932
	Thr	Ala	Glu	Thr	Ala	Lys	Arg	Arg	Leu	Ala	Arg	Gly	Ser	Pro	Pro	Ser	
					2185					2190					2195		
20	ttg	gcc	agc	tca	tca	gct	agc	cag	ctg	tct	gcg	cct	tcc	ttg	aag	gca	6980
	Leu	Ala	Ser	Ser	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	Ser	Leu	Lys	Ala	
						2200										2210	
25	aca	tgc	act	acc	cgt	cat	gac	tcc	ccg	gac	gct	gac	ctc	atc	gag	gcc	7028
	Thr	Cys	Thr	Thr	Arg	His	Asp	Ser	Pro	Asp	Ala	Asp	Leu	Ile	Glu	Ala	
							2215						2225				
30	aac	ctc	ctg	tgg	cgg	cag	gag	atg	ggc	ggg	aac	atc	acc	cgc	gtg	gag	7076
	Asn	Leu	Leu	Trp	Arg	Gln	Glu	Met	Gly	Gly	Asn	Ile	Thr	Arg	Val	Glu	
						2230						2240				2245	
35	tca	gaa	aat	aag	gta	gta	att	ttg	gac	tct	ttc	gag	ccg	ctc	caa	gcg	7124
	Ser	Glu	Asn	Lys	Val	Val	Ile	Leu	Asp	Ser	Phe	Glu	Pro	Leu	Gln	Ala	
						2250					2255					2260	
	gag	gag	gat	gag	agg	gaa	gta	tcc	gtt	ccg	gcg	gag	atc	ctg	cgg	agg	7172
	Glu	Glu	Asp	Glu	Arg	Glu	Val	Ser	Val	Pro	Ala	Glu	Ile	Leu	Arg	Arg	
						2265				2270					2275		
40	tcc	agg	aaa	ttc	cct	cga	gcg	atg	ccc	ata	tgg	gca	cgc	ccg	gat	tac	7220
	Ser	Arg	Lys	Phe	Pro	Arg	Ala	Met	Pro	Ile	Trp	Ala	Arg	Pro	Asp	Tyr	
						2280										2290	
45	aac	cct	cca	ctg	tta	gag	tcc	tgg	aag	gac	ccg	gac	tac	gtc	cct	cca	7268
	Asn	Pro	Pro	Leu	Leu	Glu	Ser	Trp	Lys	Asp	Pro	Asp	Tyr	Val	Pro	Pro	
						2295							2305				
50	gtg	gta	cac	ggg	tgt	cca	ttg	ccg	cct	gcc	aag	gcc	cct	ccg	ata	cca	7316
	Val	Val	His	Gly	Cys	Pro	Leu	Pro	Pro	Ala	Lys	Ala	Pro	Pro	Ile	Pro	
						2310						2320				2325	
55	cct	cca	cgg	agg	aag	agg	acg	gtt	gtc	ctg	tca	gaa	tct	acc	gtg	tct	7364
	Pro	Pro	Arg	Arg	Lys	Arg	Thr	Val	Val	Leu	Ser	Glu	Ser	Thr	Val	Ser	
						2330					2335					2340	
	tct	gcc	ttg	gcg	gag	ctc	gcc	aca	aag	acc	ttc	ggc	agc	tcc	gaa	tcg	7412
	Ser	Ala	Leu	Ala	Glu	Leu	Ala	Thr	Lys	Thr	Phe	Gly	Ser	Ser	Glu	Ser	

	2345	2350	2355	
5	tcg gcc gtc gac agc ggc acg gca acg gcc tct cct gac cag ccc tcc Ser Ala Val Asp Ser Gly Thr Ala Thr Ala Ser Pro Asp Gln Pro Ser 2360 2365 2370	7460		
10	gac gac ggc gac gcg gga tcc gac gtt gag tcg tac tcc tcc atg ccc Asp Asp Gly Asp Ala Gly Ser Asp Val Glu Ser Tyr Ser Ser Met Pro 2375 2380 2385	7508		
15	ccc ctt gag ggg gag ccg ggg gat ccc gat ctc agc gac ggg tct tgg Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp 2390 2395 2400 2405	7556		
20	tct acc gta agc gag gag gct agt gag gac gtc gtc tgc tgc tcg atg Ser Thr Val Ser Glu Glu Ala Ser Glu Asp Val Val Cys Cys Ser Met 2410 2415 2420	7604		
25	tcc tac aca tgg aca ggc gcc ctg atc acg cca tgc gct gcg gag gaa Ser Tyr Thr Trp Thr Gly Ala Leu Ile Thr Pro Cys Ala Ala Glu Glu 2425 2430 2435	7652		
30	acc aag ctg ccc atc aat gca ctg agc aac tct ttg ctc cgt cac cac Thr Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His 2440 2445 2450	7700		
35	aac ttg gtc tat gct aca aca tct cgc agc gca agc ctg cgg cag aag Asn Leu Val Tyr Ala Thr Thr Ser Arg Ser Ala Ser Leu Arg Gln Lys 2455 2460 2465	7748		
40	aag gtc acc ttt gac aga ctg cag gtc ctg gac gac cac tac cgg gac Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp Asp His Tyr Arg Asp 2470 2475 2480 2485	7796		
45	gtg ctc aag gag atg aag gcg aag gcg tcc aca gtt aag gct aaa ctt Val Leu Lys Glu Met Lys Ala Lys Ala Ser Thr Val Lys Ala Lys Leu 2490 2495 2500	7844		
50	cta tcc gtg gag gaa gcc tgt aag ctg acg ccc cca cat tcg gcc aga Leu Ser Val Glu Glu Ala Cys Lys Leu Thr Pro Pro His Ser Ala Arg 2505 2510 2515	7892		
55	tct aaa ttt ggc tat ggg gca aag gac gtc cgg aac cta tcc agc aag Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg Asn Leu Ser Ser Lys 2520 2525 2530	7940		
60	gcc gtt aac cac atc cgc tcc gtg tgg aag gac ttg ctg gaa gac act Ala Val Asn His Ile Arg Ser Val Trp Lys Asp Leu Leu Glu Asp Thr 2535 2540 2545	7988		
65	gag aca cca att gac acc acc atc atg gca aaa aat gag gtt ttc tgc Glu Thr Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys 2550 2555 2560 2565	8036		
70	gtc caa cca gag aag ggg ggc cgc aag cca gct cgc ctt atc gta ttc Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe 2570 2575 2580	8084		

	cca gat ttg ggg gtt cgt gtg tgc gag aaa atg gcc ctt tac gat gtg	8132
	Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val	
	2585 2590 2595	
5	gtc tcc acc ctc cct cag gcc gtg atg ggc tct tca tac gga ttc caa	8180
	Val Ser Thr Leu Pro Gln Ala Val Met Gly Ser Ser Tyr Gly Phe Gln	
	2600 2605 2610	
10	tac tct cct gga cag cgg gtc gag ttc ctg gtg aat gcc tgg aaa gcg	8228
	Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Asn Ala Trp Lys Ala	
	2615 2620 2625	
15	aag aaa tgc cct atg ggc ttc gca tat gac acc cgc tgt ttt gac tca	8276
	Lys Lys Cys Pro Met Gly Phe Ala Tyr Asp Thr Arg Cys Phe Asp Ser	
	2630 2635 2640 2645	
20	acg gtc act gag aat gac atc cgt gtt gag gag tca atc tac caa tgt	8324
	Thr Val Thr Glu Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln Cys	
	2650 2655 2660	
25	tgt gac ttg gcc ccc gaa gcc aga cag gcc ata agg tcg ctc aca gag	8372
	Cys Asp Leu Ala Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr Glu	
	2665 2670 2675	
30	cgg ctt tac atc ggg ggc ccc ctg act aat tct aaa ggg cag aac tgc	8420
	Arg Leu Tyr Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn Cys	
	2680 2685 2690	
35	ggc tat cgc cgg tgc cgc gcg agc ggt gta ctg acg acc agc tgc ggt	8468
	Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly	
	2695 2700 2705	
40	aat acc ctc aca tgt tac ttg aag gcc gct gcg gcc tgt cga gct gcg	8516
	Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ala Ala Ala Cys Arg Ala Ala	
	2710 2715 2720 2725	
45	aag ctc cag gac tgc acg atg ctc gta tgc gga gac gac ctt gtc gtt	8564
	Lys Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val	
	2730 2735 2740	
50	atc tgt gaa agc gcg ggg acc caa gag gac gag gcg agc cta cgg gcc	8612
	Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Glu Ala Ser Leu Arg Ala	
	2745 2750 2755	
55	ttc acg gag gct atg act aga tac tct gcc ccc cct ggg gac ccg ccc	8660
	Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro	
	2760 2765 2770	
60	aaa cca gaa tac gac ttg gag ttg ata aca tca tgc tcc tcc aat gtg	8708
	Lys Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val	
	2775 2780 2785	
65	tca gtc gcg cac gat gca tct ggc aaa agg gtg tac tat ctc acc cgt	8756
	Ser Val Ala His Asp Ala Ser Gly Lys Arg Val Tyr Tyr Leu Thr Arg	
	2790 2795 2800 2805	

	gac ccc acc acc ccc ctt gcg cgg gct gcg tgg gag aca gct aga cac	8804
	Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His	
	2810 2815 2820	
5	act cca gtc aat tcc tgg cta ggc aac atc atc atg tat gcg ccc acc	8852
	Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Tyr Ala Pro Thr	
	2825 2830 2835	
10	ttg tgg gca agg atg atc ctg atg act cat ttc ttc tcc atc ctt cta	8900
	Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Ile Leu Leu	
	2840 2845 2850	
15	gct cag gaa caa ctt gaa aaa gcc cta gat tgt cag atc tac ggg gcc	8948
	Ala Gln Glu Gln Leu Glu Lys Ala Leu Asp Cys Gln Ile Tyr Gly Ala	
	2855 2860 2865	
20	tgt tac tcc att gag cca ctt gac cta cct cag atc att caa cga ctc	8996
	Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Gln Ile Ile Gln Arg Leu	
	2870 2875 2880 2885	
	cat ggc ctt agc gca ttt tca ctc cat agt tac tct cca ggt gag atc	9044
	His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile	
	2890 2895 2900	
25	aat agg gtg gct tca tgc ctc agg aaa ctt ggg gta ccg ccc ttg cga	9092
	Asn Arg Val Ala Ser Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg	
	2905 2910 2915	
30	gtc tgg aga cat cgg gcc aga agt gtc cgc gct agg cta ctg tcc cag	9140
	Val Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ser Gln	
	2920 2925 2930	
35	ggg ggg agg gct gcc act tgt ggc aag tac ctc ttc aac tgg gca gta	9188
	Gly Gly Arg Ala Ala Thr Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val	
	2935 2940 2945	
40	agg acc aag ctc aaa ctc act cca atc ccg gct gcg tcc cag ttg gat	9236
	Arg Thr Lys Leu Lys Leu Thr Pro Ile Pro Ala Ala Ser Gln Leu Asp	
	2950 2955 2960 2965	
	tta tcc agc tgg ttc gtt gct ggt tac agc ggg gga gac ata tat cac	9284
	Leu Ser Ser Trp Phe Val Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His	
	2970 2975 2980	
45	agc ctg tct cgt gcc cga ccc cgc tgg ttc atg tgg tgc cta ctc cta	9332
	Ser Leu Ser Arg Ala Arg Pro Arg Trp Phe Met Trp Cys Leu Leu Leu	
	2985 2990 2995	
50	ctt tct gta ggg gta ggc atc tat cta ctc ccc aac cga tga	9374
	Leu Ser Val Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg *	
	3000 3005 3010	
55	acggggagct aaacactcca ggccaatagg ccatactgtt tttttccctt ttttttttcc	9434
	tttttttttt tttttttttt tttttttttt tttttctcctt ttttttttcc ctttttttcc	9494
	ttttctttcc tttggtggct ccatacttagc cctagtcacg gctagctgtg aaaggtccgt	9554
	gagccgcttg actgcagaga gtgctgatac tggcctctct gcagatcaag t	9605